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INTERNATIONAL CONGRES ON NATURAL, HEALTH SCIENCES AND TECHNOLOGY

BOOK OF ABSTRACTS



8TH INTERNATIONAL BALKAN
CONFERENCE IN SPORT SCIENCES

7TH INTERNATIONAL SCIENTIFIC
CONFERENCE ON APPLIED SCIENCES



6TH INTERNATIONAL SCIENTIFIC CONFERENCE
OF THE FACULTY OF MEDICAL SCIENCES



5TH INTERNATIONAL CONFERENCE OF
NATURAL SCIENCES AND MATHEMATICS



3RD INTERNATIONAL CONFERENCE OF
FOOD TECHNOLOGY & NUTRITION



1ST INTERNATIONAL CONFERENCE ON
SUSTAINABLE AGRICULTURE FARMING SYSTEMS





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Sciences**

THE EFFECT OF DIGITAL LITERACY LEVELS OF SPORTS SCIENCES FACULTY STUDENTS ON E-LEARNING ATTITUDE

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Abstract

The aim of this research is to determine the effect of the digital literacy level of individuals studying at the Faculty of Sport Sciences on their e-learning attitude. The study group of the research consists of a total of 203 participants studying at the Faculty of Sport Sciences of a public university in the 2021-2022 academic year. Personal information form and Digital Literacy and Attitude Scales towards E-Learning were used as data collection tools in the study. In the process of data analysis, Parametric tests were used as a result of the data set meeting the normal distribution parameters. When the research results are examined; It can be stated that the digital literacy levels of the participants are slightly above the average and their e-learning attitudes are at an average level. It was determined that the e-learning attitude and digital literacy levels did not differ statistically according to the gender variable, and according to the athlete license variable, the e-learning attitudes of the participants were higher in favor of those with a license. Another finding obtained from the research is that the digital literacy feature has the power to explain the e-learning attitude by 17%. Therefore, it can be stated that the digital literacy feature is also important in order to improve the e-learning attitude of individuals.

Keywords: Digital literacy, e-learning, e-learning attitude, sports.

A NAME THAT MADE A MARK ON TURKISH YOUTH AND SPORTS WITH HIS THOUGHTS: CARL DIEM

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Abstract

Carl Diem was born in Würzburg, Germany in 1882. Diem, whose family is not very wealthy, started his sports life as a long-distance runner. At the age of 17, he succeeded in founding the athletics club Marcomannia. Although he was considering other professions, Diem was elected to the board of directors a year after serving on the German Athletic Board. Diem showed a great interest in the Olympics and felt a heartfelt devotion to Baron Pierre de Coubertin. Diem has made great efforts in the field of the Olympics. So much so that the German Athletics Team, which he organized himself in 1906, won the right to participate in the Athens intermediate Olympics. After this success, Diem's biggest wish was to organize the Olympics in Berlin in 1916. However, with the outbreak of the First World War in 1914, this goal could not be achieved. Diem, who served in the German army in the First World War, was wounded during the war. Germany emerged from the First World War with serious injuries. This war prevented Germany from participating in the 1920 and 1924 Olympics, despite Diem's desire. However, Diem did not give up his determination on the Olympics and contributed to Germany's participation in the 1928 Amsterdam Olympics. Diem, who is now known all over the world, founded the Deutsche Hochschule für Leibesübungen, a sports science school. The year 1933 was a turning point for both Diem and Turkey. Everything changed when Adolf

Hitler seized power in Germany in 1933. Although Hitler's negative views about the Olympics made Diem despair, later, with Hitler's persuasion, the task of organizing the Olympics was given to Diem. Again in September of the same year, Carl Diem was invited to Istanbul by the Republic of Turkey. In line with the report he prepared, he mentioned that sports is a necessity and necessity by keeping it under state control. In this study, Carl Diem's views and thoughts are included in the report he prepared for Turkish Youth and sports.

Keywords: Carl Diem, Sport, Youth, Turkey, State.

EXAMINATION OF THE EFFECT OF ACTN3 GENE POLYMORPHISM (RS1815739) ON PHYSICAL PERFORMANCE IN PROFESSIONAL BASKETBALL PLAYERS

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Abstract

The ACTN3 gene polymorphism (rs1815739) is a variant frequently associated with athletic performance among different populations. However, there is limited research on the impact of this variant on physical performance in basketball players. Therefore, the aim of this study is to examine the effect of the rs1815739 polymorphism on the 30m and Yo-Yo IR 2 test performance in basketball players. The study included a total of 67 individuals, comprising of 20 basketball players and 47 sedentary individuals between the ages of 20-35. Genomic DNA was isolated from oral epithelial cells using the Invitrogen DNA isolation kit (Invitrogen, USA) according to the manufacturers' protocol. Genotyping was performed with real-time PCR. The Paired Samples t-test was used to examine the differences between the pre-test and post-test performances of the participant. Genotype and allele frequencies were calculated for polymorphism, chi-square (χ^2), and Fisher's exact test were used to evaluate them. No statistically significant difference was found in terms of both genotype and allele frequencies between the basketball and control groups ($p=.252$ and $p=.287$, respectively). Statistically significant differences were observed in Yo-Yo IRT 2 performance measurement tests in basketball players with CC genotype ($p=.045$), and in control group with CC, CT, and TT genotypes ($p=.034$, $p=.002$, $p=.008$,

respectively). Additionally, in the 30 m sprint performances of the basketball and control groups specified no statistically significant difference was found ($p>0.05$). When the findings regarding the effects of ACTN3 gene variants on professional basketball are evaluated together with other research results, it is thought that carriers of the C allele would provide an advantage for basketball players.

Keywords: Physical performance; Yo-Yo IR 2; basketball players; ACTN3; rs1815739 polymorphism.

**THE EFFECT OF FOOTBALL-SPECIFIC
EXERCISE PROGRAM ON VARIOUS PHYSICAL
PERFORMANCE CHARACTERISTICS IN
PROFESSIONAL FOOTBALL PLAYERS:
EVALUATION IN TERMS OF ACTN3 RS1815739
AND PPARA-A RS4253778 GENE
POLYMORPHISMS**

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Abstract

It is thought that genetic and epigenetic characteristics as well as environmental and psychological factors have a great impact on the rate of athletic performance development. Current research on athletic performance focuses on genetic variants that contribute significantly to individuals' performance. In this context, the presented research is to examine some performance values of the six-week exercise program according to the ACTN3 rs1815739 and PPARA- α rs4253778 gene polymorphisms. Twenty-two football players with the ages of 18-35 voluntarily participated in the study. Genomic DNA was isolated from oral epithelial cells using the Invitrogen DNA isolation kit (Invitrogen, USA) according to the manufacturers' protocol. Genotyping was performed with real-time PCR. Wilcoxon analysis method was used to examine the pre-test and post-test performance differences of football players. When the results of the football players according to the ACTN3 genotype variable are

examined. Although no statistically significant difference was found in the SJ, 30m, CMJ, and DJ performance tests ($p>0.05$), it was determined that there was a statistically significant difference in the YOYO IRT 2 and 1RM test results. (YOYO IRT 2: CC, CT and TT $p = .028, .042, .008$; 1RM: CC, CT, and TT $p = .018, .042, 0.05$, respectively). When the results are analyzed according to the PPARA- α genotype variable. No statistically significant difference was found in the SJ, 30m, CMJ, and DJ performance tests ($p>0.05$). However, there was a statistically significant difference in the YOYO IRT 2 and 1RM test results (YOYO IRT 2: CC $p = .001$; 1RM CC $p = .001$). It has been shown that these test methods may be alternative tests that can be used primarily within the framework of individual performance determination criteria in team sports. Still, further studies are needed to clarify the mechanism underlying the association between these polymorphisms and athletic performance.

Keywords: soccer; football; athletic performance; polymorphisms; PPARA- α rs4253778; ACTN3 rs1815739.

COORDINATION SKILLS IN PHYSICAL EDUCATION TEACHING

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Abstract

Aim: Coordination motive is regarded as a highly complex skill psychomotor rely on other skills and has psychomotor interrelationship with motor skills and especially the skills. Report of space and objects around us is reflected in the body scheme. It is current data that are based entirely and external perception sensory information. Been shown as the important role they have skin sensitivity, the kinesthetic, visual and auditory information role. The degree of coordination of movements is influenced by the level of mastery of motor skills, their level of automation, but disruptive factors or random characteristics of the environment. Psychomotor development in the important objectives pursued are: development of perceptual, sensory acuity (kinesthetic), visual and auditory memory, motor coordination. The same may be motor qualities and development of complex movements. Between motor and sensory capacities are relational links caused by the indissoluble sensory-motor processes, representative of the preoperative, the operations of concrete and finally to the logical, formal. Conclusions. A motive coordination leads to opportunity to answer whatever motive motor task complexity. Quality of response is foreshadowed by the precision movements, subject to spatial characteristics, temporal and dynamic movement.

Keywords: Development, Coordination, Children, Exercise, High School.

THE EFFECT OF THE APPLICATION OF THE FITNESS PROGRAM WITH STRENGTH EXERCISES ON BODY MASS INDEX AND SOME MOTOR SKILLS IN WOMEN

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Abstract

There are many physical exercises within fitness that can improve certain motor skills and affect the reduction of the value of the Body Mass Index, that is, the parameters that are less affected by genetic factors. This research is defined as a longitudinal study with the aim of validating the impact of an eight-week fitness program with strength exercises on Body Mass Index (BMI) and some motor skills in female recreational exercisers aged 20-30 years. The general sample included 59 tested persons who will exercise at the fitness center "Fit-In Gym" in Pristina. In this research, the morphological space is represented by one (1) variable, while the motor space is represented by seven (7) variables. Dependent group T-test analysis was applied to determine statistically significant differences regarding the effects of the eight-week experimental fitness program on motor skills and improvement in Body Mass Index. Significant changes were achieved in all variables of motor skills and Body Mass Index before starting and after the completion of the program. It can be concluded that the eight-week strength training fitness exercise program has produced positive results in increasing and improving motor skills as well as in transforming the Body Mass Index. The results confirm that exercising under controlled working conditions can be considered an effective program in terms of inducing changes in Body Mass Index in young adult women.

Keywords: Fitness, program, exercises, variables, motor skills, Body Mass Index.

DIFFERENCES IN MOTOR ABILITIES WITH ATHLETES AND NON ATHLETES AT THE AGE OF 9 - 11 YEARS

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Abstract

The main objective of the study was to prove differences in motoric ability between skiers, soccer players and non-athletes aged 9-11 years. The 9-11years old students of elementary schools in Tetovo, skiers of different clubs and football players of the "Shkëndija" - Tetovo football club, are included in the research. A total of 150 subjects, male athletes and non-athletes aged 9 - 11years old, were included in this research, in three subgroups: 50 skiers, 50 soccer players and 50 students. Total of 9 variables were applied. To determine and compare the indicators for assessment of the motor abilities among respondents dealing with athletes and non-athletes were used multi variant and uni variant analysis of variance. Based on the statistical analysis of the data it can be concluded that there is statistically significant differences in the motor abilities between the applied variables and groups. There were differences in 4 motor variables: in Long Jump between, Test of maximum, Flamingo test and Illinois Agility Test.

Keywords: motoric ability, skiers, soccer players, non-athletes, anova, manova.

DIFFERENCES IN THE WAY OF SPENDING FREE TIME AND ENGAGEMENT IN PHYSICAL ACTIVITIES BY HIGH SECONDARY SCHOOL STUDENTS

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Abstract

The purpose of this paper was to research the way students from the municipalities of Gjilan and Vushtrri spend their free time, the form of involvement in physical activities, the reasons for such a thing and the people with whom they perform these activities. In this study research in total participated 80 students of the 11th grade of upper secondary schools, where forty (22 girls and 18 boys) were from the municipality of Vushtrri and other forty (27 girls and 13 boys) from the municipality of Gjilan. The questionnaires were distributed to the students, which consisted of a total of eight questions, all of which were closed questions since they all contained relevant alternatives. In order to present the state of realization of free time from the results of this research, the “Chi Square Test” was used in data processing, which lets us know if the two groups have very different opinions. The results suggest that although there are differences in the way of spending free time, there are also many commonalities. Physical activities such as various sports, running and lifting weights are the most common. Health, relaxation and meeting friends are some of the most important aspects of doing physical activities.

Keywords: physical activities, free time, students, Chi Square Test, fitness.

CORRELATION BETWEEN PHYSICAL ACTIVITY AND DEPRESSION AMONG STUDENTS OF "ALEKSANDËR XHUVANI" ELBASAN UNIVERSITY AFTER THE PANDEMIC PERIOD

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Abstract

The purpose of the study is to determine the relationship between physical activity and depression between the two sexes among students at "Aleksandër Xhuvani" Elbasan University after the pandemic period.

Methodology: The study is a cross-sectional study and included students who studied in 2 Faculties (Faculty of Economics and Faculty of Education Sciences) at "Aleksandër Xhuvani" Elbasan University. First and second year students from the above 2 Faculties during the period January 2021-January 2022 were included in the study. Data were collected through a self-report questionnaire and a self-constructed questionnaire. The data obtained were analyzed in version 21 of the IBM Statistical Package for the Social Sciences (SPSS).

Results: Of the 500 students who participated in the study 220 (or 44%) were male and 280 (or 56%) were female. The average age of the participants was 20.03 ± 0.9 years.

One hundred and three (or 20.6%) students were assessed to be more likely to suffer from depression during the pandemic period. Of these 103 students, 44 (42.7%) were female and 59 (57.2%) were male.

Only 38 students (or 36.89%) from the group of students suffering from depression symptoms during the pandemic performed regular physical activity while they had stopped it during the pandemic. The other group of 65 (or 63.10%) students had never performed physical activity.

30% of students reported fatigue and inability to follow their normal routine. Pearson correlation was calculated for the association of depression and age, and was found to be significant (p-value less than 0.05). The correlation for depression in relation to physical activity was also found to be significant (p-value less than 0.05).

Conclusions: Low levels of physical activity, especially during the pandemic period, may have been a major risk factor for the development of depression and the possible worsening of any pre-existing mental disorder. Considering the long-term effects of the pandemic, there is a need to combat this problem to reduce the use of pharmaceuticals for the treatment of depression.

Keywords: depression, physical activity, students, pandemic.

THE PREVALENCE OF OBESITY AND THE IMPORTANCE OF PHYSICAL ACTIVITY IN THE HEALTH OF THE STUDENTS OF "ALEKSANDËR XHUVANI" ELBASAN UNIVERSIT

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Abstract

Obesity and overweight are major public health problems worldwide today. The purpose of the study: is to evaluate the prevalence of overweight and obesity among students of "Aleksandër Xhuvani" Elbasan University, and evaluate their sports activity, basal metabolism and the relationship between sports activity, basal metabolism and gender.

Materials and methodology: The study is of descriptive cross-sectional type. A descriptive questionnaire was conducted with 500 students (220 or 44% of them were male and 280 or 56% were female) of the Faculty of Physical Education and the Faculty of Economics. It included open and closed questions and included the following topics: demographic information (age, gender, place of birth, residence), anthropometric parameters (body weight, height, waist measurement), sports activity and sleep duration.

Results: Body mass index (BMI) was calculated and the relationship with sports activity, basal metabolism and gender was evaluated. The results showed that 112 students (22.4%) were overweight and 31 students (6.2%) were obese. The number of students with normal BMI (18-24) was 314 (62.8%) and those with BMI <18 were 43

(8.6%). Females had a significantly higher waist circumference than males (82.04 ± 10.2 cm vs. 79.9 ± 9.5 cm). There was a strong positive correlation between BMI and waist circumference for women ($r = 0.656$; $p < 0.001$) and men ($r = 0.697$; $p < 0.001$). Among the 500 students enrolled in the study, 221 students were involved in a sports activity (44.2%) and the duration of sports activity per session for men (1.33 ± 0.4 hours; $p < 0.001$) was significantly higher than for women (1.24 ± 0.54). h). For the four BMI categories, women had significantly lower basal metabolic rates than men. In addition, obese and overweight students have higher basal metabolic rates than normal weight students, while underweight students have lower basal metabolic rates ($p < 0.001$).

Conclusions: The prevalence of overweight was higher than the prevalence of obesity among our students and higher among women compared to men (67.83% women -32.16% men). This problem can be managed by planning informative and promotional programs for students to encourage their participation in various physical activities.

Keywords: obesity, overweight, physical activity.

THE ACHIEVEMENTS EVALUATION OF 3RD GRADE STUDENTS IN THE PRIMARY CYCLE OF STUDIES, IN THE SUBJECT "PHYSICAL EDUCATION, SPORTS AND HEALTH"

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Abstract

In the framework of the changes and developments that have occurred and continue to occur in the field of education, a special importance is also being given to the approach to curricula and teaching programs. This new approach, such as learning with competences, is also found in the subject "Physical Education, Sports and Health" of primary education.

This concept, in contrast to the traditional learning process, aims to place the student on the main focus, to make him a researcher, selector and documenter of individual contributions, in learning activities oriented to the competences of the field.

The aim of this paper, is the achievements evaluation of 3rd grade students in the primary cycle of studies, in the subject "Physical Education, Sports and Health" through learning with competences process.

The methodology of the paper is based on literature research, observation, testing of the constituent elements of the program of the Physical Education, Sports and Health subject, analysis, comparison and discussion regarding the achievements and expectations of the students during a 3-month period.

The paper closes with the conclusions of the approach to this new concept, in the curriculum of the primary cycle, as well as the necessary suggestions and recommendations for students and teachers in the field of Physical Education and Sports.

Keywords: Physical Education, Sports and Health, learning with competencies, assessment of achievements, primary education.

INTERCEPTION AND ANTHROPOMETRY OF WRESTLERS

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Abstract

The purpose of the study was to look at the relationship the between visual, auditory and mixed reaction with body mass index to wrestlers 15-17 year old (average age: 16.25 ± 1.83). Wrestlers ($n = 26$) from three sports clubs in Tirana attend training six times a week. The measurements were made twice, the first in February 2023 and the second six weeks after the program, speed exercises are performed for 10 minutes three times a week, in addition to wrestling training. Visual, auditory, and mixed response times were measured with Newtest 1000. Three trials were performed for each reaction time. Body Mass Index (BMI) tested was 22.59 ± 4.33 kg / m² (Height: 165.75 ± 2.58 , Weight: 69.24 ± 5.47). The best result in the measurements is used for statistical analysis. The data were analyzed using the ANOVA program, where correlation between reaction and BMI was low ($p > 0.05$). Positive results were found between visual, auditory, and mixed reaction ($p > 0.01$). As a result of this study, it can be said that the 6-week speed training applied to the tested wrestlers has a positive effect on the reaction performance.

Keywords: Development, Program, Relationship, Body Mass Index, Reaction, Speed Exercises.

EXAMINING THE RELATIONSHIP BETWEEN COGNITIVE FLEXIBILITY AND ATTITUDES TOWARDS ARTIFICIAL INTELLIGENCE TECHNOLOGIES AMONG STUDENTS STUDYING SPORTS SCIENCES

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Abstract

Cognitive flexibility and attitude towards artificial intelligence technologies can be an indicator of how effectively sports consumers can use these technologies and whether they can perform better in sports. In this study, the aim was to investigate the relationship between the attitude towards artificial intelligence and cognitive flexibility of students studying in sports sciences, and to examine the socio-demographic variables affecting this relationship. A total of 405 undergraduate students studying in sports sciences constituted the research group. The study applied the descriptive statistics method using the SPSS program. The reliability was examined with Cronbach's alpha, and then the normal distribution of the data was analyzed using the Kolmogorov-Smirnov test. Subsequently, hypothesis analysis and correlation analysis were performed. Significant differences were obtained in the hypotheses of the frequency of using technological devices during exercise and the frequency of exercise. It was found that the attitudes towards artificial intelligence and cognitive flexibility of those who use technological devices more frequently during exercise and those who exercise regularly were higher. In addition, a statistically significant relationship was found between cognitive flexibility and attitude towards artificial intelligence. In light of the findings,

recommendations were made to improve the skills and attitudes of sports science students in these areas, which could contribute to achieving better results in sports management and coaching.

Keywords: Sports Industry, Artificial Intelligence, Cognitive Flexibility, Sports Sciences.

THE IMPACT OF FUNCTIONAL EXERCISES ON WEIGHT REGULATION AND FITNESS MAINTENANCE IN OLDER ADULTS

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Abstract

Many scientific researches have shown that regular physical activity cannot stop the biological aging process but can improve the quality of life in elderly people. How we age varies from individual to individual, but many scientific studies have shown that older adults should engage in physical activity for better health. Various studies in this field focus not only on basic exercises but also on the broad concept of the field of functional physical activity. Physical well-being in old age depends instead on controlling and maintaining body weight. Many pathologies typical of this age, such as cardiovascular system malfunctions or musculoskeletal structure problems, can be attributed to being overweight. For this, functional physical exercises must be continuous, to stop the accumulation of fat and at the same time keep the heart, muscles, and joints strong. Going up and down stairs, carrying and carrying weights, walking in straight lines and zig-zags should be part of the permanent "diet" of the "menu" of physical activity for the elderly. According to the WHO, functional physical exercises, in old age, are good for health because: they improve cardiovascular, muscular, and psycho-emotional health and reduce the risk of chronic diseases deriving from obesity.

Keywords: functional physical exercises, old age, fitness, overweight.

MOTOR SKILLS AND THEIR ROLE IN THE COMPLEX MOVEMENT PREPARATION OF NOVICE INDIVIDUALS

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Abstract

The focus of this study is the development of movement skills in organized sports and recreational physical activity, with the goal of accelerating and significantly improving physical movement abilities, especially for individuals with relatively initial physical-movement levels, including both males and females, under the cyclical stationary method.

The study utilized "training complexes" with athletic features as an operational structure for effective physical-motor and coordination preparation. The study was conducted over a two-month period. It was conducted with a group of 49 second-year students at the Faculty of Physical Activity and Recreation at the Sports University of Tirana, over a two-month period.

The training practice significantly improved the indicators of motor skills and increased their growth within a shorter period of time. In the standing long jump test, personal results improved by 11-15 cm for both males and females. In the test 5-steps with jump from the place, personal scores improved by 50-79 cm for males and 40-60 cm for females. In the 50m run test, personal results improved by 0.3-0.4 sec.

Keywords: Movement skills, Amplitude, Mobility, Plyometrics, Coordination.

**ENABLING AWARENESS TO IMPROVE
HEALTH THROUGH THE AFFIRMATION OF
STATISTICS ON A GLOBAL SCALE FOR THE
INSIGHT OF ANTHROPOMETRIC INFLUENCES
ON THE IMPROVEMENT OF MOTOR,
PSYCHOLOGICAL AND SOCIOLOGICAL
DEVELOPMENT IN ADOLESCENTS**

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Abstract

The prevalence of obesity among adolescents is increasing globally, which creates a need to highlight it as part of the health challenges of the future. All this is due to unhealthy eating habits, reduced movement, as well as the potentials for growth and development in the social community itself.

There are a number of scientific practices that actualize the importance of the role and connection of anthropometric traits with the overall weight of the person, which especially alludes to the need for trend analysis among adolescents.

The very differences in anthropometric characteristics create a real insight into an existing trend of influence on the general state of health, with special reference to the motor, psychological and sociological development of the personality.

In the context of the above, the analysis takes into account data from descriptive statistics, level of nutrition, that is, overall nutrition status.

The overall impact and current analysis are followed by the technological challenges that adolescents are exposed to, which has a direct impact on their lifestyle, and thus on their psycho-physical activity and condition.

The purpose of this paper is to display existing and current relevant data regarding the prevalence of obesity among adolescents, in order to derive relevant recommendations for preventive action in a given social frameworks, as well as psycho-social influence and surrounding.

Keywords: prevalence, obesity, motor, psychological, social, development.

ANALYSIS OF THE IMPACT OF EATING HABITS AND LIFESTYLE ON ANTHROPOMETRIC PARAMETERS WITHIN HIGH SCHOOL STUDENTS

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Abstract

There are growing trends of obesity, which additionally affect and initiate accompanying diseases among the young population. In that direction, it is especially important to assess the daily habits but also the way of life that includes physical fitness among young people. It is of particular importance to follow the WHO recommendations, in order to prevent future challenges.

In the framework of this paper, a parallel research is done on thinner and more obese children, high school students, in order to see the level of movement of parameters that can help to set up more reliable analyzes in a future time. In addition, the analysis refers not only to age but also to gender. The main research framework was realized within the framework of a secondary educational institution, with a selected target group of respondents, and based on the use of an instrument - a survey questionnaire, the measurability of attitudes was carried out on a Likert scale. Following, using the method of descriptive analysis, the data were further analyzed.

The purpose of the paper and the conducted empirical research is to find a connection between BMI factors and eating habits, as well as overall lifestyle.

Keywords: habits, diet, high school students, anthropometric, parameters.

INTERRELATIONSHIPS BETWEEN ANTHROPOMETRIC VARIABLES AND OVERWEIGHT: ANALYSIS OF EFFECTS USING STANDARD DEVIATIONS

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Abstract

Body mass index (BMI) correlates with several anthropometric variables associated with overweight during different ages in childhood, however certain anthropometric variables contribute most to variation in childhood BMI.

When viewing standard deviations, the following BMI data are taken into account: height (H), sitting height (SH), waist circumference (WC), waist to height ratio (WHtR), waist to sitting height ratio (WSHtR), the subscapular skinfold (SSF) and the triceps skinfold (TSF). Most often, age group contributes to a greater extent than gender to variation in BMI with a score of standard deviation (SDS).

In the paper, an analysis of secondary data of a group of respondents was carried out, in order to see the degree of accuracy of BMI in predicting overweight and obesity. At the same time, it can be seen that the annual increases in BMI relate to a greater extent to lean muscle mass than to fat mass, however, there are variations in relation to gender and age. In the analysis and interpretation of the data, the method of comparison, the method of specification and the method of synthesis and generalization are used.

Keywords: BMI, gender, age, standard, deviations.

IMPROVING VO₂MAX THROUGH STRENGTH TRAINING

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Abstract

In this article there are quite interesting data on numerous studies, which prove that strength exercises have an optimal effect on improving VO₂max, if special training programs and methods of weight exercises are applied in the circuit system.

To improve aerobic performance, each applicant must go through 3 stages:

The first phase is related to the optimization of muscle contractions, which is achieved through capillarization to the inside of the muscle, where weight training takes a primary role, while running plays a supporting role.

The second phase is related to the improvement of aerobic performance, which directly affects the increase in VO₂ max values. In this phase, running plays an important role, which significantly affects the improvement of body components.

The third phase or the stabilization phase is related to the increase in the body's ability to burn fats and therefore to the stabilization of body weight.

This serves to show our intention in the experimental study that we started from the system of preliminary measurements. So, our goal is to use different exercises to increase aerobic performance through the passage of these three phases.

Keywords: vo₂max, resistance training, weight circuit training, cardiovascular.

TRAINING PRINCIPLES TO HELP INCREASE PERFORMANCE

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Abstract

Why should people engage in physical activity? People engage in exercise for several reasons: to improve their health and physical condition, to achieve sporting ambitions, to remove the tension and stress of everyday life, to lose weight to feel good. Participation in sports encourages cooperation in sports teams, develops the element of competition, gives us a physical challenge, and the opportunity to meet new people and make new friends. Training to improve the athlete's performance conforms to the principles of training: specificity, overload, improvement, adaptation, and reversibility. In addition to developing an athlete's overall levels of overall mobility, coaches need to consider the specific mobility requirements of a given event. The coach can analyze the technique of his event, identify which actions are included and defined, and which need to be improved in the types of movement. A weight thrower, for example, may seek improvements in shoulder and back mobility. A hurdler may need to develop their pelvic mobility.

Keywords: training, performance, physical activity, mobility.

CONTEMPORARY AND TRADITIONAL METHODS AND TECHNIQUES THEIR ROLE FOR EFFECTIVE LEARNING IN THE LOWER CYCLE

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Abstract

The purpose of this study is to ascertain how much modern methods and techniques take place in relation to the teacher's students. Identify the most useful methods in a lesson.

The most effective evidenced in a lesson as well as the contemporary impact in these methods of thinking methods, communication skills, research, independent, creative thinking, problem solving, initiative, etc.

For the realization of the study, the use of quantitative (questionnaire) and qualitative (interviews, conversations) methods. For the needs of the study in the application of two questionnaires (questionnaire 1 for teachers and questionnaires 2 for students), the interview carried out by the right structures of the schools, unstructured interviews, conversations with the teachers of the students of the schools taken in the study. Finally, 100 students were collected for questionnaire 1 and 15 teachers for questionnaire 2. Interviews were conducted with 3 principals of the schools included in the study, as well as unstructured interviews with the teacher of primary school students.

Where the study was carried out in 3 9-year schools in the city of Tirana, namely "Emin Duraku", "Edit'h Durham" and "Skënder Luarasi" schools. The study population is students of the fourth to

fifth grades, the teacher who exercises their activity in the primary cycle classes as well as the principals of these schools.

From the collected data we come to the conclusion that: Contemporary teaching methods bring important and significant changes in learning, as a result of the improvement of teachers for their teaching. Contemporary methods aim to put the teaching and learning process on a contemporary basis, as well as the timely improvement of the teaching and learning process. The implementation of student-centered learning models is a necessity for contemporary and quality learning. These true positive facts about contemporary teaching – knowledge in education saying the hypothesis created.

Contemporary methods are practiced in our schools, but we must not forget that our teachers, especially those with many years of work in education, are still a little traditional in the classroom. While for new teachers, more trainings, talks, open subject lessons should be organized so that Basque methods should remain 100% and learning for students should be a desire of the department within, not only.

Keywords: contemporary method, traditional method, quality in education, cooperation.

THE EFFECT OF A 12-WEEK EXPERIMENTAL PROGRAM ON THE SEGMENTAL VELOCITY AND EXPLOSIVE STRENGTH OF THE LOWER AND UPPER EXTREMITIES IN ADOLESCENTS

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Abstract

The aim: The aim of this study was to validate the 12-week effect of the experimental program on the performance of segmental velocity and explosive strength of the lower and upper extremities in adolescents.

Methods: The research was carried out in a sample of 220 male entities aged 15 years \pm 6 months, high school students in the municipalities of Kumanovo and Likova, in the Republic of North Macedonia. The sample of 220 subjects was divided into 2 groups: Group A: Experimental (GE, n=115, height 168.6, weight 60.4, IMT 21.09) and Group B: Control (GK, n=105, height 168.1, weight 56.8, IMT 20.8). Subjects from the experimental group underwent a 12-week experimental program, while the control group did not follow any adequate program, except for 2 regular hours during the week in the subject of physical education. To evaluate the performance of segmental speed and explosive strength of the lower and upper extremities, we used foot tapping, hand tapping, standing long jump, standing high jump, supine medicine ball throw and seated medicine ball throw tests. . The study had a longitudinal character and lasted 12 weeks, with 36 hours of training or 3 hours during the week and 2 hours from the subject of physical education.

Results: The results of the study after the application of the experimental model, in the final measurements, show that all the variables of the explosive force of the lower and upper extremities have statistically significant differences ($p=0.05$), between the control and the experimental group, in favor of the experimental group, while the segmental velocity variables have no significant differences. According to data from the univariate analysis of variance (ANOVA), in the initial measurements, no significant differences appeared in any test used in this study. While according to the data from the univariate analysis of covariance (ANCOVA), in the final measurements, we find that the data system in the space of physical fitness has statistically significant differences in the high jump tests (KLV) ($p=0.019$), lying medicine ball throw (HTMSH) ($p=0.026$), sitting medicine ball throw (HTMU) ($p=0.038$) and long jump from place (KGJV) ($P=0.047$), while segmental speed parameters have no significant statistical differences.

Conclusion: All the tests are in favor of the experimental group, which can prove that this experimental model, with 3 extra hours per week, in a 12-week period, has a positive effect on the development of the explosive strength performance of the lower and upper extremities in adolescent. Practical application: These findings provide further evidence for the improvement and enhancement of physical fitness performance through the implementation of the experimental program model in the adolescents who attended this experiment.

Keywords: experimental model, segmental velocity, explosive strength, adolescents, ANOVA, ANCOVA.

THE PREVALENCE OF PARTICIPATION AND ENGAGEMENT IN FITNESS GYMS IN TIRANA

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Abstract

Participation in physical activities is universally accepted in the scientific environment as a health good for life. In this study, several fitness gyms in the city of Tirana were taken into consideration, where, through a questionnaire, we recorded factual data on the exercisers' participation in fitness. The data was processed with the SPSS 26 package where we analysed the percentage and frequency of participation in these gyms. The data showed a high percentage of participants in these fitness centers, but the most significant was that of women. The age of the participants varies by gender and where the age over 45 prevails. On average, the exercisers engage in these fitness activities 3 times a week, spread over different periods throughout the year. An interesting result has emerged in the type of activity in which the participants take part, where a high percentage attend weight training and cardio. These data are very necessary for a continuous monitoring of the population and especially for the monitoring of health parameters.

Keywords: fitness, exerciser, gym, training.

EVALUATION OF ISOMETRIC MUSCLE STRENGTH OF THE HANDS FOR PHYSICAL EDUCATION STUDENTS BETWEEN WOMEN AND MEN, COMPARED TO THE AMERICAN COLLEGE OF SPORT MEDICINE (ACSM)

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Abstract

The upper limbs play an important role in the activities of everyday life. The hand is used in many different ways in our daily life. The grip strength provides an objective index of functional integrity and overall upper limb strength. Many sports activities require high levels of upper parts. Also, as a general rule, people with strong hands tend to be strong in other elements of physical conditioning. The aim of this study was to compare the maximum isometric hand-grip strength of physical education students for ages 20-25, with the rates set by (ACSM) and create a classification table.

Methodology: N = 23 students aged 20-25, exactly girls average age 20.3 years and boys 22.5 years, with average height for girls 168.1 cm and for boys 183.4 cm and weight per gender, girls 60 kg and boys 83.6 kg. They were tested with Takei Hand Dynamometer in three trials and the best result was recorded. During the testing, we made sure that the execution technique is accurate according to the protocols of CSEP.

Results: for women the right hand 29.1 and the left hand 25.7 total 54.8. For boys 40.1 right hand and 36.6 left hand total 76.7. Compared to the rates of (ACSM) girls are ranked in the fair category 58-62 and boys in the poor category ³83.

Conclusions: the group presents a low level of fitness in the above ensembles, tending to be lower in other elements of physical conditioning.

Keywords: grip hand, strength, dynamometer, provides.

AN OVERVIEW OF THE IMPACT OF AEROBIC TRAINING ON INCREASING AGILITY AND VO2 MAX IN YOUNG SOCCER PLAYERS

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Abstract

Aerobic exercise refers to the type of physical activity that requires the body's metabolic system to use oxygen to produce energy. On the other hand, soccer is a sport that requires aerobic and anaerobic strength, as well as physical skills related to speed, agility, strength, and power. To meet these physical needs of soccer players, coaches now offer a variety of aerobic exercises that essentially use the lower and upper extremities, as well as large muscle groups. For this reason, the purpose of this research is to critically analyze research that has examined the effects of aerobic exercise training and to highlight some of the main features of these studies in relation to agility and VO2 max parameters, with the final aim of creating and the development of a specific aerobic program with music, to ensure that young Albanian soccer players, by improving these parameters, increase their performance level and minimize the risk of injuries before and during competitive matches. Specifically, this study is expected to prove how the implementation of an aerobic training program will have a positive impact on at least two of the main moral and physiological components required in soccer, which are speed, agility, and endurance. We searched the following databases: Pub Med, Google Scholar, Crossref, etc. Keywords: "aerobics", "aerobic exercise", "aerobic training", "aerobic dance", "soccer", "young soccer players", "VO2 max", "soccer performance" and "agility",

together with "effect", "change" and "impact", published in the last 10 years. Aerobic training nowadays, through its programs, has taken on the dimensions of a social phenomenon for physical activity and health, and sports. However, we found a recent paper that examined the inclusion of a modern aerobic program (aerobic dance) in soccer players, the effectiveness of their training, the characteristics of the included subjects, the variables of interest, and the experimental design. As for aerobic exercises, training, or aerobic training in natural forms of movement or in its naturally stimulated forms, a considerable number of studies were found recently published. These researches studied the effects, impact, influence, and changes brought about by aerobic training of different forms in young soccer players. In most cases, the positive effects of training are declared during a training period of 8 to 12 weeks. The best outcomes show that the aerobic training program in all its forms has successfully met the specifics of soccer. The hypothesis of our future experiment would be: "Innovative training techniques have an impact on young soccer players' physical and functional recovery as well as their ability to perform better in sports".

Keywords: "aerobic training", "aerobic dance", "soccer", "young soccer players", "soccer performance", "VO2 max", "agility".

DOMINANCE RATES OF MOTOR ABILITIES IN ARTISTIC GYMNASTICS

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Abstract

The aim of the study is to analyze and determine the Dominance rates of motor abilities in each apparatus of artistic gymnastics based on the updated content of techniques given by FIG.

This research is designed in the descriptive model of quantitative studies designed to reveal an existing situation. In order to carry out the dominance of motor abilities around 800 techniques both on men and women given by FIG in Technical Manual have been analyzed. Each motor skill involved in the techniques has been analyzed and descriptive results have been given in a separate chart. The expression of the results has been given by applying descriptive and frequency statistics.

When the results were examined, it appears that although there is a similarity in terms of motor skills among artistic gymnastics disciplines, each discipline has its own specific requirements. It has been observed that the motor skill requirements of the apparatus are affected by the structure of the apparatus, the techniques applied to the apparatus, and the FIG rules related to the apparatus. The apparatus requirements vary depending on the degree of difficulty of the movements. Therefore, since the development of the discipline changes the requirements of the apparatus need to be constantly updated.

The study concludes that as the difficulty degree of techniques changes, new techniques are found and put on the code of point, technology involved in gymnastics, etc., the motor ability dominance may change, and training for gymnasts will need an update based on these changes.

Keywords: Motor Skills, Artistic Gymnastic Apparatus, Involvement Ratio, Prioritizing motor skills.

CHARACTERISTICS OF PHYSICAL FITNESS OF PROFESSIONAL FOOTBALL PLAYERS IN RELATION TO PLAYING POSITION

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Abstract

In this paper, the physical fitness characteristics of professional football players in relation to the playing position have been investigated. The aim of this study was to determine if the speed, speed with change of direction - agility, explosive strength of the lower extremities and isotonic strength of the muscles of the upper extremities in football players varies according to the playing position. The research was conducted on a sample of 24 elite football players (n=24, age 25.82±5.6 years) who play in four different positions, such as goalkeeper (GK), defender (DF), midfielder (MF) and forward (FW). Univariate analysis of variance ANOVA was used to compare the following variables: 10 meter and 20 meters linear sprint, T-test of agility, squat jump, counter movement jump-free hand and 1RM Bench press. The results showed a significant influence of the game positions on the performance of the counter movement jump – free hand (F=3.800, p=0.026) and the performance of the 10 meters linear sprint (F=3.243, p=0.044). The LSD post-hoc test analysis revealed significantly better performance in the countermovement jump test (CMJ-free hand) in favor of attacking players (FW) (47.24 cm), compared to midfielders (MF) (37.60 cm) and goalkeeper players (GK) (38.05 cm), better performance in the squat jump test (SJ) was again shown by forward players (FW) (39.22 cm) compared to goalkeeper players (GK) (31.10 cm) and also in

speed ability, through in the 10-meter linear sprint test (R10m), significantly better performance was shown by offensive players (FW) (1.83 sec.) compared to goalkeeper players (GK) (2.03 sec.) and defensive players (DF) (1.94 sec.). The results of this study may provide detailed strategies for coaches and clinical practitioners for developing position-specific fitness programs in professional football players.

Keywords: physical fitness performances, elite football players, speed, agility, explosive strength, ANOVA.

RELATIONSHIPS AND INFLUENCE OF ANTHROPOMETRIC CHARACTERISTICS AND PHYSICAL FITNESS PARAMETERS IN 100 M SPRINT RUNNING IN ADOLESCENTS

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Abstract

In this paper, we have searched the relationships and influence of anthropometric characteristics and physical fitness parameters in 100 meters sprint running in teenagers. The purpose of this paper is to prove the relationship between anthropometric characteristics and physical fitness parameters as a predictor system in the 100 meter sprint running as a criterion system. The research was carried out in 170 male subjects aged 14 years \pm 6 months, in the primary schools "Bajram Shabani" and "Naim Frashëri" - Kumanovo, Rep. of North Macedonia. A total of 12 variables were used in the research, of which 7 variables were used for the assessment of anthropometric characteristics, including: body height, body mass, body mass index, chest circumference, thigh circumference, thigh fat and abdominal fatty tissue, 4 variables for evaluating physical fitness parameters, including: 10x5 Shuttle run, agility T-test, standing long jump and standing high jump, and 1 variable for evaluating speed, also: 100 meter sprint running. Based on the results obtained and the analysis carried out, we can conclude that: the variables of anthropometric characteristics and the parameters of physical fitness (as a predictor system) have a statistically significant impact on the in 100 meters running criteria variable, at the level of reliability $q=.000$. It's also worth noting that from the entire predictor system, the greatest

individual impact on the 100 meter run criterion variable, have variables: standing long jump (MKGJV) with a negative beta coefficient value of $-.330$ and a reliability level of $.000$, T - agility test (MTT) with a positive beta coefficient value of $.187$ and a reliability level of $.003$ and 10x5 Shuttle run (10x5Sh) with a beta coefficient value of $.150$ and a reliability level of $.032$. From these results, we can conclude that adolescents of this age who have developed physical fitness parameters such as explosive strength of the lower limbs and speed with a change of direction – agility, achieve better results in 100 meters sprint running and also we recommend that the same tests be applied by athletics trainers to identify sprint running talent.

Keywords: anthropometric characteristics, physical fitness parameters, 100m sprint running, adolescents, regression.

IMPACT OF THE OTAGO WALKING AND EXERCISE PROGRAM ON IMPROVING BALANCE PARAMETERS IN THE ELDERLY. (LITERATURE REVIEW)

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Abstract

With increasing age, neuromuscular deficits can result in impaired physical performance and increased risk of falls in those over 65 years of age. The main intrinsic risk factors for falls are age-related gradual decline in balance and strength/power performance, as well as other known factors. The objectives of this literature review are to evaluate the causes and factors that cause falls at this age and to prove the effects of a preventive exercise program based on two main pillars; the OTAGO exercise program and walking. A systematic literature search on the topic of this paper was conducted in electronic databases such as PubMed, Crossref, Google Scholar and Research Gate. The study will be based on initial tests in the laboratory where the level of static and dynamic balance will be identified for both the experimental group and the control group. Participants will be seniors, 65+, who receive accommodation and assistance services in Tirana nursing homes, who are able to walk with or without aids, who have at least 1 fall experience within the past 12 months, and who have passed a minimalist mental state test. The expected sample size, based on the primary outcome, is thought to be 65 randomized participants for both groups, including an estimated dropout of 15-20%. Discussion: This first-of-its-kind study conducted in our country will generate new and contemporary knowledge on the positive effects of an exercise program to prevent falls in elderly

people over 65 years of age who receive services and are housed in old people's homes. Conclusions: The systematic literature review and meta-analysis aimed to define the quantitative relationships of balance training modalities to maximize improvements in balance performance in healthy elderly aged 65 years and older. The expected significant improvement of the balance from 38-48% would constitute a serious achievement of the Albanian science of physical activity for health.

Keywords: Falls prevention, ageing, older people, walking, OTAGO exercise program, balance.

MOTOR ACTIVITY AT PRESCHOOL CHILDREN IN TIRANA

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Abstract

Introduction: The beneficial impact of physical activity on physical, social and cognitive health indicators is well-known in school-aged children [1, 2]. Children in preschool age should be encouraged to practice fun activities, games, exploring various physical and emotional experiences and environments, such as play and activities, including several actions, including; run, swim, jump, play, think, draw up plans, in insurance and supervised environments [4].

The aim of this study was to determine the level of physical activity of children during the period of stay in preschools, and associated factors.

Subjects and Methods: Measurements were performed for 100 preschool children of both sexes and ages (4-5 & 5-6 years old) Objective measurements will be performed according to the Pierre Voiger Test.

Keywords: physical activity; school aged children, emotional experience, exercise.

A SOCIAL DEMENSION OF PHYSICAL ACTIVITY AND HEALTH AT ADULT 40 – 60 YEARS OLD IN TIRANA

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Abstract

Introduction: There is considerable and consistent evidence that regular participation in physical activity (PA) has physical and mental health benefits for people of any age [1,2]. In older adults, evidence suggests that exercise reduces risk of cardiovascular disease, osteoporosis, some types of cancer, falls and cognitive decline [3,4].

Subjects and Methods: This study have PEACH questionnaires from European Youth Heart Study (56 male and 53 female, 40-50 years old-randomly selected in fitness center "No Limits Academy").

Keywords: free time, exercise, social support, adults, gender.

A RETROSPECTIVE OF SCIENTIFIC EVENTS FROM 2013 TO 2023 (ONE DECADE) FACULTY OF PHYSICAL EDUCATION, UNIVERSITY OF TETOVA

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Abstract

The purpose of this work is a retrospective of the scientific events at the Faculty of Physical Education (FPE) at the University of Tetova (UT). Also, a ten-year review of a scientific journey has also been made as well as the challenges encountered within a decade will be seen. Results. The FPE at the UT held its first scientific event named International Balkan Symposium in Sport Sciences (IBSSS) in 2013 and until 2023 a total of 8 Conferences, 1 Symposium and 1 Congress have been held, 8 of which are held at UT and 2 abroad at the Trakya University and Uludag University both in Turkey, the next one is the 11th scientific event 8thIBCSSL2023 which will be held in UT. The conferences are organized in cooperation and partnership with different universities of 5 countries: Macedonia, Albania, Kosovo, Turkey, and USA. The first Journal of Sport and Health (JSH) was published in 2014 and currently in 2023, the publication of Vol. 9 No. 19-20 has been published. The next issue of the magazine which is under preparation is Vol. 10, No. 21, therefore, the announcement of the next number will be made in the current conference. The Scientific Board of the IBCSS as well as the magazine JSH meet the international criteria with more than 40% of foreign participants of the respective field. Also, the works of JSH are reviewed by 3 anonymous reviewers with what determines the type of work. The JSH magazine is accepted by several databases and can be found both as a hard copy and in electronic form on the UT webpage. The official

language of the conference and the journal is English. The conference possesses ISBN, and the magazine possesses UDC and ISSN (print and online). Also, two Workshops were organized with the University of Illinois/USA and the Faculty of Kinesiology/Croatia, while the third workshop will be held at the current conference 8thIBCSSL2023 with the Kirkpinar College of Physical Education, University of Trakya Turkey and the Faculty of Sports and Physical Education, University of Sarajevo, Bosna and Hercegovina. And as a conclusion, from the beginning of the organization of scientific events as well as the scientific magazine, the tendency to increase the scientific level and value is always in the focus of UT, namely FPE of, therefore different opinions, suggestions and genuine criticism will always be welcome.

Keywords: A decade of scientific events, Conferences-Congresses-Symposiums (IBCSSL), Journals (JSH).

FOOTBALL FANS AND SPORTS EVENTS OF THE SHKENDIJA FOOTBAL CLUB TETOVA

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Abstract

The main purpose of this research is to verify the actual situation of the fans in the Shkëndija Football Club from Tetova.

Method of work: A total of 315 male and female fans of different ages were included in the research, where 287 respondents are male and 28 are female. The research was carried out by means of the Questionnaire, which included 58 questions. Based to the history of the club's establishment, the suspension of the club and its re-establishment, the establishment of the Balliste fan group, the announcement of the state champion for the first time, the arrival of Shkëndija FC before the threshold of extinction due to of not having sponsors, and in the end the sponsorship of the club by Ecolog and the recent historical achievements of Shkëndija FC and some of the most important results obtained with the questionnaire are as follows: Shkëndija FC from Tetova is a serious club which in recent years is at the peak of historical achievements, therefore the organization of this club as well as its management should be done by professionals and not by groups of people who know how to form impenetrable clans. Therefore, the leadership of the club should be modified or built according to the needs of the club and not the needs of individuals; Shkëndija FC in order to have the primacy of a serious club with a world character needs a football Academy in which both athletes and coaches will be educated, trained and selected, and why not train the club's fans as well. Such a thing can only be done under the management and leadership of the Ecolog; Shkëndija FC needs to find ways to preserve the football talents that emerge from its own

school, such a concern is often encountered by players, parents and football professionals who know best how to make that assessment; Indeed, as the fans stated in most cases, the treatment and care of Shkëndija FC towards the fans it is not at a proper level and it must be improved for the benefit of both parties, since there were fans, there are fans and there will always be fans, but the club also needs the fans, the more educated and prepared they are, the better they will reflect on the club with their support and not with problems as they know sometimes happen.

Conclusion and recommendation, no club can be imagined without fans, therefore their main demand is to be protected by law by the state and to be treated with respect by the clubs, in this case Shkendija FC from Tetova.

Keywords: KF Shkëndija Tetovo, Ballistët fans, Questionnaire.

THE DIFFERENCES OF SOME MORPHOLOGICAL CHARACTERISTICS OF STUDENTS OF THE UNIVERSITY OF TETOVA

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Abstract

The correct reflection of the effects of physical education lessons can only be ascertained if there are objective indicators for this, which can only be obtained through concrete research. From what was said above arises the need and requirements for researching the differences in morphological characteristics among the students of the University of Tetova by comparing the syllabuses of the Sport and Sports Activities subjects in the different study programs of the first year. The purpose of this research is to compare the morphological characteristics of students between 5 different study programs at the University of Tetova. The subjects that are included in this study are first-year students of the University of Tetova in different fields and study programs. A total of 100 male students were included in the study, who in the first year follow the subject of sports and sports activities. For the evaluation of the morphological characteristics, we used the following variables: body height, right leg length, body weight, thigh circumference, calf circumference, arm circumference, body mass index, knee joint diameter, ankle diameter, elbow diameter, arm-triceps adipose tissue, stomach adipose tissue, back adipose tissue, calf adipose tissue, arm-biceps adipose tissue, thigh adipose tissue and adipose tissue composition. Of the 17 morphological variables, there are significant statistical differences between the students of the 5 study programs in only 6 variables, including: the length of the right leg (0.00), the circumference of the

leg (0.02), the diameter of the knee joint (0.00), the diameter of the elbow joint (0.00), thigh adipose tissue (0.01) and arm adipose tissue (0.03). The students of all study programs, in terms of physical development, respectively the reports of morphological indicators are at a satisfactory level, in terms of differences, the students of the food technology program show a better profile, while the students of the English language program show less satisfactory results.

Keywords: morphological characteristics, students of the University of Tetova., Anova, LSD-test.

ASSESSMENT OF BASIC ACROBATIC EXERCISES OF NINE-YEAR PRIMARY SCHOOL MALE STUDENTS IN HARAQINA MUNICIPALITY

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Abstract

The main purpose of this research is to evaluate the basic acrobatic exercises of 11-14 year old male students in nine-year primary schools in the region of the Municipality of Araçina, as well as to see which basic acrobatic exercises the students perform successfully and which they present difficulty during performance. We hope that the results obtained from this work will serve us for the compilation of school programs, namely the subject of sports gymnastics. At the same time, the exercises that have a more complicated structure will be detected and the same should be removed from the curriculum or should be given more hours and improvement of the work methodology.

Method of work: A total of 160 male students between the ages of 11 and 14 were included in the research. For all the variables that were evaluated in this research, the basic statistical parameters (Descriptive Statistics) were applied. For gymnastic exercises, or more precisely for basic acrobatic exercises, the method of evaluation by three teachers for each student in particular was used. The grades that were used during the evaluation of gymnastic exercises are 1, 3 and 5, or in other words the student cannot do the exercise at all, does the exercise moderately or with help, and finally the student does the exercise by himself without help.

From the **results** obtained, it can be seen that the majority of the basic acrobatic exercises such as: splits, bridge, balance, shoulders stand, hand and head stand, head stand, forward flip, backward flip and side rotation-cartwheel have been performed by the students without difficulty, it is best proven by the evaluations carried out where some have performed moderately and some well. However, there are two exercises that have presented difficulties during the performance of basic gymnastic exercises, they are back rotation around the shoulder and back rotation with hands. These two exercises obviously have a more complicated structure and therefore it would be good to allocate more teaching hours to learning and mastering these exercises, or to remove from the school programme.

Conclusion and recommendation: After what was said above, we can only expect that the results of this work will serve for a better future for the subject of gymnastics/acrobatics. Therefore, first of all, the lesson fund and the school curricula should be reviewed as to how functional, logical and productive they are, the programs should be updated based on the demands of daily life, as well as the conditions in schools should be improved, and at the same time, the teaching staff should be trained with the necessary knowledge and updated.

Keywords: Basic acrobatic exercises, age 11-14 years old males, Nine-year primary school.

NUTRITIONAL SUPPLEMENTATION AND PHYSICAL ACTIVITY AMONG STUDENTS DURING COVID-19 PANDEMIC

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Abstract

COVID-19 pandemic resulted in a general lockdown around the world, including our country. The importance of nutrition and physical activity has been even more highlighted during this period. Nutritional recommendations emphasized the importance of taking nutritional supplementation particularly vitamins for enhancing the immune system. The aim of the study was to evaluate the influence of COVID-19 pandemic in physical activity and nutritional supplementation among AAB College students (n=296). The method used was online survey, sent to students from April 12, 2023, to April 30, 2023. In general, 38.2% of respondents declared that the COVID-19 pandemic did not affect their physical activity, 22.3% were affected (no physical activity due to COVID-19) and the rest 39.5% didn't perform any physical activity. Among students, 52.7% declared that were infected with COVID-19. 64.5% of students got nutritional supplementation during this period. Results showed that Vitamin C was the most consumed nutritional supplement followed by Multivitamin. Physical activity was more pronounced among physical culture and sports students (83.3%) as these students were more aware of the positive effects of exercising on their health. Nutrition combined with a healthy lifestyle plays a determinant role in overall human health. In conclusion student's knowledge of nutrition and lifestyle contributed greatly to the student's nutritional supplementation choice and physical activity during COVID-19.

Keywords: Physical activity, nutrition, COVID-19, supplements.

THE INFLUENCE OF TEACHER BEHAVIOR ON STUDENT STIMULATION IN PHYSICAL EDUCATION

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Abstract

Physical education has a very important place in the curriculum of the education system. To achieve the methodological-didactic objective, as a subject appreciated by the students, the teacher sets goals aimed at motivating the students and stimulating their participation in curricular and extra-curricular sports activities. There are several ways to positively motivate students in terms of teacher teaching and learning, such as: enthusiasm, engagement, teacher response, understanding, appreciation, and cooperation. Starting from these modalities, we can say that teachers, who show real enthusiasm and interest during teaching, have many opportunities to arouse interest and desire to learn and work with the student. Teacher evaluation is very important, especially to stimulate demotivated students to engage in physical activity. The teacher must be able to understand the emotions, fears, anxieties, and questions that arise from the students during the physical education lesson so that they can plan and schedule their work in the most professional way possible. During his work, the teacher must educate, through movement, to develop all the main psycho-physical components of the person (emotional-affective, relational-social, creative-expressive, psychomotor, physical-biological, cognitive, etc.). He teaches, organizes, and directs the main ball sports games (basketball, soccer, volleyball, handball, etc.) or traditional games, with emphasis on group activity, team spirit (cooperation, respect, fair play, etc.), on cognitive stimulation.

Keywords: Physical education, sport, teacher, stimulation.

EFFECTS OF MENSTRUAL CYCLE PHASES ON ATHLETIC PERFORMANCE IN ALBANIA FEMALE SOCCER PLAYERS

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Abstract

Women's football in Albania has grown a lot in recent years, however gender-specific physiological differences have rarely been taken into account. Female reproductive hormones, which rise and fall throughout the menstrual cycle, are known to influence numerous parameters such as: cardiovascular system, respiratory system, thermoregulatory and metabolic system, which in turn may have implications for exercise physiology and soccer performance. Therefore, the main purpose of this study was to investigate the possible effects of menstrual cycle phases on athletic performance in specific tests.

Eleven elite female soccer players, who have menstrual cycles of the same physiological length were enrolled. Three main physical performance tests were performed (Yo-Yo Intermittent Endurance Test (Yo-Yo IET), Vertical Jump Test (CMJ) and 3x30m sprints). These were performed at different time points during the two main phases of the menstrual cycle (early follicular phase (FP) and mid-luteal phase (LP)).

Yo-Yo IET performance was significantly lower during mid-LP compared to early FP. A trend towards significance was observed ($p = 0.08$).

The results of this study are in support of a reduction in peak endurance performance during mid-menstrual cycle LP. However, the same effect was not observed for jump and sprint performance. Therefore, consideration of cycle phase when monitoring a player's endurance capacity may be valuable.

Keywords: Menstrual Cycle, Athletic Performance, Soccer Players.

THE EFFECT OF A SIXTEEN-WEEK PROGRAM ON SOME ANTHROPOMETRIC AND MOTOR INDICATORS OF 16–17-YEAR-OLD BASKETBALL PLAYERS

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Abstract

A sample with 108 members was realized with 16 and 17 years old female basketball players, members of the youth schools of FBC “Struga 2009”, FBC “Krosig” Skopje, and FBC “Bashkimi” Prizren, to determine the effects of sixteen-week practice process for developing explosive strength of the lower limbs. The sample was composed of three groups, realized by 36 female basketball players. The research applied a total of six (6) variables for the assessment of the specific motor skills: Movement in back space in basketball position /BSBP/, Movement in defensive basketball stance 6x4m /MDB6X4/, Vertical jump on a ball that hangs for 10 sec /VJ10S/, Rejecting the ball from the board jump in with both hands/RJBH/, Test breakthrough of the laying basket for 30 sec /TBL30/, Kamikaze ball /KB/. Based on the results obtained we came to a conclusion that both experimental models applied improve explosive power of the lower limbs. The first experimental model causes significant positive changes and is more efficient than the second one. Both models can be realized by 16 and 17 year old female basketball players. The results obtained from the t-test for the motor variables in the first and second subsample of respondents show that there is a statistically significant effect in all the studied variables. All specific-motor

variables in the first and second subsamples, in percentage the first experimental model had a greater effect than the second experimental model. In the third subsample, the effects of the training process are insignificant.

Keywords: experimental program, explosive power, motor skills, specific motor abilities.

**TEN-DAY CARBOHYDRATE
SUPERCOMPENSATION DURING AN
INTENSIVE COMPETITION PERIOD AMONG
PLAYERS OF THE FIRST LEAGUE AND
CHAMPIONSHIP FOOTBALL CLUB STRUGA -
"TRIM LUM"**

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Abstract

The research is done with the players of the football club FC Struga - Trim Lum, who compete in the first Macedonian football league. This research was carried out on a sample of 30 players in order to determine the effects of the latest method of sports nutrition, that is, the method of nutrition through carbohydrate supercompensation. The duration of this diet was 10 days during an intense competition period. Carbohydrate supercompensation method is one of the recent methods of sports nutrition, where athletes intensively, gradually and progressively fill their carbohydrate glycogen muscle depots for 10 days in order to better prepare for the start of a new tournament in the football championship. The players maintained a high level of VO₂ max throughout the championship without changes of the type of overload and fatigue. The method proved to be successful because the experimental group won the first place of the championship. In addition to other factors, it has been proved that the key factors of success in sports are (physical preparation, technical-tactical preparation, psychological support) and others. Nutrition plays an

important role in achieving success in sports and maintaining good health and athletic performance.

Keywords: carbohydrate supercompensation, sports nutrition, glycogen muscle depots.

SPORTS GRADUATES' CAREERS: IMPLICATIONS FOR EMPLOYABILITY TACTICS IN HIGHER EDUCATION SPORTS COURSES

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Abstract

The increased emphasis on the economic value of higher education (HE) has resulted in a focus on graduate employability. Because there has been little empirical research into graduate careers in sport, the goal of the study was to investigate the nature of sports graduates' careers and the implications for the development of sports students' employability.

To better understand the state of the sports labor market, the University of Sports of Tirana and Sports Research Institute performed a one-year research in each of Albania's 12 districts.

In this study, we will present the data from the questionnaire given to the Master's students at the University of Sport of Tirana, for their perception of the job market in sports, the evaluation of the training thus far provided by the program they have been enrolled in in relation to the job market, and their perception of program elements that can be improved.

The future sports career view was identified utilizing various methodologies, and it is underlined the necessity for sports graduates to develop career management skills and technical abilities in order to increase their chances of employment in the sports industry.

Keywords: sports labor market, career, management skills.

AN OVERVIEW OF THE IMPACT OF SPECIFIC TRAINING PROGRAMS ON THE HEALTH AND SPORTS PERFORMANCE OF VOLLEYBALL PLAYERS AGE 14-16

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Abstract

Volleyball is an aerobic-anaerobic team sport that includes a combination of explosive movements, technically well-coordinated with short recovery periods. This has been verified that can be negatively affect problems, with postural asymmetry in volleyball players.

For this reason, the main purpose of our study is:

1. Designing a specific training program with a group of exercises that will help strengthen and stabilize the spine to improve the problems that volleyball players have with the spine, also ensuring an increase in sports performance.

2. Also the improvement of physical parameters such as: strength and balance, in young volleyball players.

One of the problems that has recently been noticed among today's children in general, but also among volleyball athletes, are spine problems.

In the sport of volleyball, specific tasks such as jumping, and hitting the ball must be combined with a series of movements. This requires a lot of concentration and high preparation from the neuro-musculo-

skeletal system. This may be one of the reasons why volleyball players are always contingently at risk for musculoskeletal injuries.

In volleyball players, there is thought to be overload due to the repetitions of unilateral body movements. This leads to postural changes. For this reason, postural asymmetry in sports, especially in people who train regularly and use one hand over head, is thought to be the overload from the repetitions of one-sided body movements. From the results of the selected studies, we will find out, how technique, strength and balance can affect in one of the main technical element of the sport of volleyball, shooting, to spine problems in volleyball athletes.

Thus, the main focus of this paper was to identify the main reasons that negatively affect the postural asymmetry of volleyball players and the identification and selection of different exercises that can affect the improvement of postural asymmetries, described in the literature until 2023.

The literature search was carried out in different databases to determine those elements that serve to evaluate physical coordinative and technical volleyball shooting skills. The main objectives of this paper are: Summary of studies of the correct way of executing the technique of the shooting in volleyball, the force exerted impact by the volleyball athlete during the shooting as well as the balance of the body during the jump in shooting the ball. Studies of exercise programs that have been used to improve spinal irregularities have also been selected. Mainly, the literature used refers to electronic data sources, on websites such as: PubMed, Research Gate, Google Scholar and Crossref, and mainly belongs to the last 10 years.

Keywords: volleyball, postural asymmetry, balance, strength technique in volleyball.

THE TREND OF “CHOOSING” INTO THE FIELD OF SPORT FOR YOUNG STUDENTS

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Abstract

Labor markets are central to the understanding of sport activities. Based on the latest researches on this topic, the Institute of research in sports of Tirana had developed a questionnaire and a one year research implemented in 12 districts across Albania.

The study begins by outlining the trend in the labor market into sports, in the short, medium and long term in Albania, and more specifically in the sports University of Tirana in the master's programs; what are the criteria points for choosing the different university careers or study programs in this large area. The research method used was the gender division, male and female, their choosing methods for future university careers and future choices into labor market in sports.

Keywords: young students, sport, labor market.

DIFFERENCES BETWEEN ANTHROPOMETRIC CHARACTERISTICS AND MOVEMENT SKILLS OF YOUNG BASKETBALL AND VOLLEYBALL PLAYERS

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Abstract

Purpose: This research aims to verify the differences of some anthropometric characteristics and basic movement skills of basketball and football players.

Methods: Children aged 12 years, from basketball club 45, and football club 56, of the male gender, were included in the research. The methods applied in order to accomplish the tasks presented in this paper are: statistical descriptive method (parameters of central tendency, distribution and correlations), regression analysis, as well as the T-test method for verifying the differences between schools. The results were processed in the computer program SPSS 20.0.

Results: In the anthropometric space, significant statistical changes were presented in all variables, except for the thigh circumference variable, and these changes are in favor of basketball players. Even in the movement space, significant statistical changes were presented in all variables, except for the variable of jumping from place to length, and these changes are in favor of basketball players.

Conclusion: Based on the values obtained in the anthropometric parameters, it can be said that the biological development and growth

of these young people is normal for their age. The distribution of the results obtained in the anthropometric and movement variables is normal, with little asymmetry and mostly positive.

Based on the above results, it can be seen that the arithmetic averages of the anthropometric and movement variables of the groups differ among themselves, and this difference is almost in all variables in favor of the basketball players.

Keywords: Basketball players, Football players, Anthropometry, Movement, Differences, Connectivity.

THE STATUS OF SOME MORPHOLOGICAL AND MOTORIC PARAMETERS AMONG STUDENTS OF THE LOWER SECONDARY SCHOOLS IN THE MUNICIPALITY OF OBILIQ

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Abstract

The purpose of this research is to verify the status of the physical growth and of the motor development, as well as their comparison with the standards according to the World Health Organisation (WHO), the norms of the tests from the Youth Fitness Test Norms (YFTN) and Crofit norms including the measurements of the basic anthropometric characteristics and motor skills of the students of the lower secondary school in Obilic. 78 girls and 70 boys, pupils of the 7th to 9th grades, participated in the research.

From the results of the descriptive parameters, it can be observed that the sample has a symmetrical distribution of results. Compared to the results obtained from Crofit norms, it turns out that the average values in BMI are similar, but in the motor variables there is a marked difference in favor of Crofit norms. Based on the normative data of the backward-walking test, there is a marked difference between students tested with Crofit norms (around 3.5 seconds for boys and 6.5 seconds for girls).

Through the discriminative analysis (T test for independent samples), a significant statistical difference in longitudinal parameters between groups by gender was proven, whereas in the movements parameters,

statistically significant differences have been ascertained in the hand dynamometer variables, Long Jumps and felxibility variables.

Keywords: Pupils, morphological parameters, movement skills, comparison, T test.

50 YEARS AFTER THE OLYMPIC GAMES IN MUNICH - SPORT AND THE UNHEARD-OF PROTEST

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Abstract

The main purpose of the research is to analyze the historical event of the attempts to protest the non-suspension of the Olympic Games in Munich in 1972 after the Israeli athletes were killed. The structure of the article is as follows: 1. Introduction: When do our greatest fears come true? 2. Notifications about the attack; 3. The assassination and the dead athletes; 4. The reactions after the attack; 5. The reactions in the following years. The right to protest is an expression of publicity and communication in the community when the relationship between free civil law, civil defense and civil choice is compromised. Problems in the world and human life is everything, but there seems to be a spectacular problem in human life like terrorism, as of now, even though countless words have been said and strenuous security measures have been taken - no critical protests? The text of this report is dedicated to the memory of the tortured athletes, in the terrorist attack that was carried out on September 5, 1972 at the opening of the 20th Summer Olympics in Munich. The protest that did not reach its peak after the terrorist act on September 5, 1972, somehow was always silenced after that, in every attempt, again and again, to destroy the peace of society, with the violence of the terrorist impulse, with every assassination attempt. Thus, with the globalization of the world, as the opportunities before humanity increase, so do the risks.

Keywords: Olympic Games, Munich, sport, protest, terrorism.

A LITERATURE SUMMARY OF TRAINING PROGRAMS IN PHYSICAL AND MOTOR CHARACTERISTICS IN BASKETBALL AT AGES

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Abstract

Introduction: Development is a complex phenomenon or a type of behaviour that integrates many structures and functions related to real life. Basketball is a sport that requires basic and motor characteristics such as strength, speed, endurance and coordination, high-intensity activities such as (jumping, dribbling, shooting, blocking and sprinting (Delextrat & Cohen, 2009).

Purpose: The objective of this literature review is to investigate and research the impact of training programs on physical parameters in basketball in age groups.

Methodology: In this literature review, the basic principles of selection in several stages of the literature by means of keywords are used based on the works of (Moher et al., 2015; Nakagaëa and Cuthill, 2007). Major databases were used through the Jab Ref program such as Cross Ref, DOAJ, Inspire, Web of Science, Scopus, and Sport Discus in the last 10 years. Key words were used in the first stage of the selection, such as: basketball, training, motor skills. The electronic control resulted in a search of 480 scientific works. Further, in the next stage of selection, some additional keywords such as effects, kids, youth, and intervention were placed. After the literature search, 47 scientific papers were found which were taken into consideration in this paper.

Results: The influence of parameters such as speed and agility is very important in basketball performance, for this reason players who are not fast enough cannot succeed in modern high-level basketball (Jakovljević, Karalejić, Ivanović, Štrumbelj, & Erčulj, 2017). Players with well-developed speed and agility can execute elements of modern basketball technique and tactics more efficiently (Harley, Doust, & Mills, 2008). In the study of Cengizel, (2020) it was determined that speed and agility, which are often considered a necessity of basketball, develop with age and differ statistically significantly from one age-group category to another. From the comparison of motor characteristics in the study of Çetinkaya (2019) significant results were found between young children and young adults in the vertical jump test and in the speed test.

Conclusions: In the study of (Tsunawake et al., 2003) sports performance improves during adolescence and young adulthood using appropriate training programs and also helps in a successful career in adulthood. Acquiring sports skills requires a long training time (Sayın, 2011) and the best period of development of motor skills is between the ages of 8-13 years (Mengutay, 2005) as well as motor skills such as aerobic endurance, speed and agility improve in this period (Taskiran, 1997). Finally general coordination plays an important role until the acquisition of the specific skills of a certain sport, after this moment the importance of general coordination declines (Kamandulis et al., 2013).

Keywords: basketball, drills, motor skills, agility, speed.

KINEMATIC DETERMINATION OF THE RISK OF FAILURE DURING THE PERFORMANCE OF THE BENCH PRESS TECHNIQUE IN COMPETITION

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Abstract

Entry and purpose: The modern training process in any sport cannot be imagined without developing certain muscle groups of the body using the Bench press exercise. The purpose of this study was to determine the force exerted on the barbell and to show the risk of failure during the crucial phases of the barbell push in competition conditions.

Methodology: Bench press technique performance was recorded with two digital cameras placed on both sides of the platform where the technique was performed. The filmed material was analyzed with the System for kinematic analysis - APAS (Ariel Performance Analysis System). 12 weightlifters participated in the competition - 10 men and 2 women, from the Republic of Albania and the Republic of Kosova, competitors in the National Championship in the disciplines of strength in weightlifting, held in 2019 in Prizren. The technique (exercise) was performed with maximum effort according to the rules of the competition, while the best result for each athlete was taken for analysis. The main indicators analyzed in this study are: the force manifested on the barbell for the crucial phases of its push and the work done while performing the Bench press technique.

Results: There is a great difference in the result of lifting the barbell in the Bench press technique between men and women: for men

(n=10), it is (154.50 ± 34.03) kg, while for women (n=2) the result is (75.00 ± 21.21) kg. Meanwhile, the ratio between the weight of the barbell and the weight of the athlete for men is (1.78 ± 0.23) , while for women (1.10 ± 0.14) . The maximum acceleration of the barbell lift occurs after 25.21% of the total lift time. In this phase, maximum manifested force on the barbell is achieved (1429.73 ± 438.86) (N). From the beginning of the deceleration of the rise until the appearance of the second acceleration is the period of the 'rising crisis' (sticking point). After passing the sticking point, the second acceleration appears, where the second force manifested on the barbell is (1423.84 ± 457.19) (N). The maximum vertical height of the barbell lift is (0.31 ± 0.034) (m), which is achieved in a total time of (2.21 ± 0.72) (s). The maximum vertical force during the barbell lift is (1439.29 ± 443.21) (N). The work while lifting the barbell in the Bench press technique has a value of (461.76 ± 159.39) (J), while the power is: (414.16 ± 224.98) (W).

Completion: The stages of lifting the barbell in the Bench press technique are followed by two accelerations. After the first acceleration until the beginning of the second acceleration is the period of occurrence of the risk of lift-off failure (sticking point). These data can be used for better planning and programming of the training process for the Bench press exercise (technique).

Keywords: Bench press, kinematic analysis, force, sticking point.

A COMPARISON STUDY IN CHILDREN BY GENDER FOR COORDINATION ABILITY IN ELEMENTARY SCHOOL LEVEL IN TIRANA

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Abstract

The aim of this study was to compare the current level of coordination ability in elementary school children by gender in Tirana. In total participated 510 children in elementary school (253 boys and 257 girls) where by grade participated (1st= 128, 2nd = 137, 3rd =117, 4th =70 and 5th = 58) living in Tirana, Albania. The level of coordination ability for lower limbs was assessed using jumping sideways test (JS) part of Körperkoordinations Test für Kinder (KTK) battery test: jumping bilaterally as many times as possible over a wooden rod (60 cm x 4cm x 2 cm) in 15 seconds. The number of jumps over two trials was summed. Data analysed by gender in elementary school children in Tirana show no statistical significance $F=0.135$ and $Sig= 0.714$ (boys=50.5 jumping and girls 49 jumping). Also data analysed by gender and for each grade in elementary school children in Tirana show no statistical significance. In conclusion data results from this study show that there are no difference by gender for coordination of lower limbs in elementary school children.

Keywords: jumping, elementary school, gender, KTK.

A STUDY ABOUT COMPARISON OF COORDINATION ABILITIES BY GENDER AND AGE IN ELEMENTARY SCHOOL CHILDREN IN TIRANA

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Abstract

A study about comparison of coordination abilities by gender and age in elementary school children in Tirana where performed in this research in the city of Tirana. In this study participated elementary school children as follow (1st= boys 70 and girls 58, 2nd = boys 61 and girls 71, 3rd =boys 51 and girls 66, 4th =boys 37 and girls 33 and 5th = boys 29 and girls 29) living in Tirana, Albania. We used two tests from Körperkoordinations Test für Kinder (KTK)- Moving Sideways (MS): moving one plate on sideways and the subjects stood on the other plate (25 cm x 25 cm x 5 cm) in 20 seconds. The plate had to be moved with two hands. The total amount of points was counted and summed over two trials. Walking Backwards (WB): walking backward three times along each of three balance beams (3 m length; 6, 4.5 and 3 cm width). A maximum of 24 steps (eight per trial) were counted for each balance beam, which comprises a maximum of 72 steps for this test. Data analyses for gender comparison show no statistical difference for walking backwards ($F=0.002$, $Sig= 0.968$) and moving sideways ($F=0.289$, $Sig= 0.591$). Also when database where split by grade level statistical analysis using independent T test show no statistical significance. Final results from this study show no difference in actual level of motor coordination by gender in the city of Tirana in elementary school children.

Keywords: gender, moving sideways, KTK, comparison.

THE LEVEL OF JUMPING PERFORMANCE BY GENDER AMONG PRIMARY-AGE CHILDREN IN TIRANA THROUGH THE KTK TEST

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Abstract

The aim of this study where to compare the level of jumping performance by gender among primary-age children in Tirana through the KTK test. In total participated 510 elementary school children (253 boys and 257 girls). While divided by grade (boys- first =70, second= 66, third=51, fourth= 37 and fifth= 29, girls- first =58, second= 71, third=66, fourth= 33 and fifth= 29). Hopping Height (HH) from Körperkoordinations Test für Kinder (KTK) was used to assess jumping performance: jumping from one leg (right/ left) over an increasing pile of pillows (40 cm x 20 cm x 5 cm each) after a short run-up. Every trial was evaluated and the subject had three trials on every height. Three, two or one point(s) were/was awarded for successful performance on the first, second or third trials, respectively. Results from this study show that boys in elementary school has the score 6.67 of jumping performance (total= right+ left performance) while girls has the score 6.33. Independed sample test by gender for each grade show no statistical significance in every grade except grade 2 ($F=5.99$, $Sig= 0.016$) for hopping height in right foot and for hopping height in total ($F=5.058$, $Sig= 0.026$) where boys have better performance compare to girls. Also data show statistical significances in favor of boys for jumping performance in fifth grade.

Keywords: jumping, KTK, grade, comparison.

A COMPARISON STUDY FOR BALANCE ON INTELLECTUAL DISABILITIES CHILDREN BY GENDER

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Abstract

Being differently abled is a complex phenomenon which reflects an interaction between the features of a person's body and the features of the society in which he or she lives. The aim of this study is to compare balance on intellectual disabilities children by gender. The test manual was taken from the Guidelines to FUNfitness Tests and Measures. In this study participated 34 children. Tests were performed such as: single leg stance - eyes open, and single leg stance - eyes closed. The measurements were made in the period March-April 2023, in 4 cities in Albania.

Results for single leg stance- eyes open right foot show: (boys 22.1 seconds and girls 15.9 seconds) and left foot (boys 18.5 seconds and girls 8.5 seconds). Results for single leg stance- eyes closed right foot show (boys 10.8 seconds and girls 8.1 seconds) and left foot (boys 8.0 seconds and girls 8.3 seconds). In the conducted study, from the statistics analysis we come to the conclusion that only in the single leg stance - eyes open test for left foot boys have a better balance than girls ($F= 7.47$ and $Sig= 0.010$). While in all in the other tests we noticed that both boys and girls have equal balance.

Keywords: balance, intellectual disabilities children, foot, comparison.

EFFECTS OF FOOTBALL TRAINING PROGRAMS ON BASIC MOTOR SKILLS OF YOUNG PLAYERS

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Abstract

Introduction: Fundamental movement skills are defined as the "building blocks" or "foundations" of complex movements. The constant challenge of coaches and sports scientists is to find an appropriate ratio between innate and acquired motor skills. The development of motor skills helps to improve all body functions, having a great importance especially in this age group.

Objective: The objective in this literature review is to find the latest scientific information about the effects of football training programs on the basic motor skills of young players.

Methods: The materials used in this paper were obtained from electronic databases such as pubmed, web of science, Cochrane library, scopus, Google Scholar. The inclusion criteria used (total = 1210 studies) in this literature work are: studies that include basic motor skills, basic motor skills in children in soccer, age group of children 7-13 years, intervention training program over 8 weeks. Key words: straight line running, jumping, object control, dribbling, speed, aerobic performance. In this literature review, exclusionary criteria such as: children with physical problems and the lack of basic information about the experimental group were also used during the searches in the above databases. In total, 45 studies were used in this literature review.

Conclusions and Discussions: According to the study by He Q et al., (2021) a 12-week training program (270 min per week) that includes

soccer techniques and ball control shows a significant improvement in straight line running. An analysis of groups participating in intervention training programs showed that training programs longer than 1,800 minutes were more productive than intervention programs with shorter amounts of time (Mao et al., 2022). In the age group of 7-9 years, this training program aimed at improving running in a straight line was more efficient than in the age group of 10-13 years, and in girls it is more productive than in boys (Mao et al., 2022).

Keywords: Football, teams, skill, speed, training program.

TECHNICAL TRAINING AS A STRUCTURAL ELEMENT OF MULTI-YEAR SPORTS TRAINING

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Abstract

In sports-pedagogical practice, the understanding that the foundations of high sportsmanship are laid in childhood and early adolescence is increasingly confirmed. Successful sports development and improvement is primarily a function of the first steps in big football – the selection and early training of young football hopefuls.

Along with improving and updating the educational and training process and increasing sportsmanship, the age theory and methodology seeks new approaches, formulates new ideas and knowledge adequate to the modern needs of the virtual football game.

Multi-year sports training should be considered as a complex unified and comprehensive pedagogical and educational process in the context of special physical training for the formation of a wide range of motor skills and habits. The essence of this process, based on the differentiated stages, is specified in the changes occurring during the physical, technical, tactical and psychological preparation. In this sense, the importance of technical skills for any sport is extremely important.

The purpose of the research is to create and experiment with optimization methodology for technical training of young football players.

Keywords: sports training, football players, game, physical development, technical training, optimization.

A STUDY ABOUT THE RELATIONSHIP BETWEEN ANTHROPOMETRIC PARAMETERS WITH FLEXIBILITY AND SPEED IN YOUTH BASKETBALL PLAYERS

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Abstract

The aim of this study was to find out any relationship between anthropometric parameters with flexibility and speed in youth basketball players. The participants were youth basketball players U16 in 5 teams that were participated regularly in basketball championship in Albania (N= 49). Body height and body weight were measured to assess anthropometric parameters in youth basketball players. To assess flexibility were used sit and reach test while to assess speed were used 10m sprint test.

Result from this study found there was a positive correlation between body height and sit and reach test ($r=0.02$, Sig= 0.8910) and with sprint 10m test ($r=0.263$, sig= 0.081). Data results from body weight with sit and reach test showed a negative correlation ($r= -0.034$, sig= 0.817) and a positive correlation with sprint 10m test ($r=0.0368$, sig= 0.013).

Keywords: basketball, flexibility, speed, sprint.

A 10 YEAR MONITORING STUDY FOR GROSS COORDINATION ABILITIES IN CHILDREN LIVING IN TIRANA

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Abstract

The aim of this study was to monitor for a period of 10-year gross coordination abilities with regard to elementary school children living in Tirana. In 2013 were assessed 139 boys and 150 girls while in 2023 were assessed 253 boys and 257 girls (age- first grade till fourth grade). Two tests from a battery of Körperkoordinations Test für Kinder (KTK) were chosen to assess gross motor coordination abilities as follows: Walking Backwards (WB): walking backward three times along each of three balance beams (3 m length; 6, 4.5 and 3 cm width). Moving Sideways (MS): moving one plate on sideways and the subjects stood on the other plate (25 cm x 25 cm x 5 cm) in 20 seconds. The plate had to be moved with two hands.

Results from this 10 year monitoring study show a significant decrease from year 2013 to 2023 as: walking backwards (balance) first grade $F=4.95$; $Sig=0.027$, third grade $F=9.63$, $Sig=0.002$, fourth grade $F=20.08$, $Sig=0.000$. Also for moving sideways results showed a significant decrease only for first grade children $F=7.783$; $Sig=0.006$.

Keywords: balance, moving with plates, gross, KTK.

INTERNATIONAL ACTS FOR THE PROTECION AND DEVELOPMENT OF SPORT

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Abstract

The study aims to make a general analysis to a significant aspect of Western civilization and contemporary approaches of democratic and capitalist sports systems. Sports law relations, employment contracts, sports contracts in athlete's transfers, freedom of association and their legal frameworks, are the foundations of social welfare in democratic countries of rule of law, nowadays.

Because labor relations dealing with issues of human rights (such as national, racial, religious, social, or gender based non-discrimination, child labor or exploitation of minors, prohibition of slavery and forced labor, etc.), basic labor standards are also an essential criterion to be fulfilled and respected by countries to join the EU.

Relevant international documents and institutions, such as International Sports Organization and its conventions, European Union legislation (regulations, directives, decisions, recommendations, etc.) The European Charter on Social related to this field, will be the focus of our study.

Thus, the methodology used in my study will be that of analyzing international remedies, statistic case, regional and provisions that define and ensure basic human rights in the world of work.

Keywords: Fundamental human rights, sports labour contracts, labor relations, ILO, international sports legislation.

A COMPARISON STUDY FOR STRENGTH OF UPPER LIMBS IN INTELLECTUAL DISABILITIES CHILDREN LIVING IN ALBANIA

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Abstract

The hand strength test can be used to indicate problems of general health. Different studies have investigated the maximum hand grip strength in different groups of individuals such as adults, adolescents and children with and without disabilities. Moreover, the hand grip test has been shown to be a valid tool for measuring muscle strength in persons with some diseases and disabilities.

The aim of this study was to compare the actual level of strength of upper limbs in children with intellectual disabilities. In this study participated 33 children from different schools in Albania. Children were selected in city of Tirana, Shkoder, Përmet and Roskovec after having approval from the local authorities and parent consent. We have used handgrip in order to find out strength of upper limbs in these children with intellectual disabilities. Handgrip test used in this study is part of fitness battery FUNFitness validated and used internationally. The statistical analyses are performed via “IBM Statistics 22”. The statistical analyses include descriptive analyses through statistical descriptive indicators, as well as the Independent Samples Test. Descriptive statistics shows by gender for right handgrip strength: (boys = 13.1 N and girls = 9.8 N) and for left hand (boys= 13.8 N and girls = 8.6 N).

Final results using Independent Samples Test show no statistical significance for the current level of upper limb strength (handgrip right $F= 0.909$, $Sig =0.348$ and handgrip left $F=1.169$, $Sig= 0.288$).

Keywords: strength, intellectual disabilities, children, handgrip.

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CONSTRUCTION OF THE FIRST PHOTOVOLTAIC POWER PLANT WITHIN THE FRAMEWORK OF JSC ESM

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Abstract

In order to realize the green scenario, foreseen in the Energy Development Strategy in the Republic of North Macedonia until 2040, the existing coal-fired thermal power plants with an installed capacity of 800 MW should be successively closed in the coming period. For the same reason, the Republic of North Macedonia became a member of the PPCA Alliance (Powering Past Coal Alliance) and the first country from the Western Balkans that, together with Spain, committed to abandoning the production of electricity from coal by 2030.

Hence, the problem that has been elaborated is very relevant due to the fact that it deals with the continuation of the existence of MPC "Oslomej " through energy transition, that is, replacement of electricity production from coal, with production from solar energy.

The analysis in this paper is focused and aims to address the importance of the further operation of MPC "Oslomej", with the construction and commissioning of the first photovoltaic plant PVPP Oslomej 1 of 10 MW. Afterwards, MPC "Oslomej" will continue with the construction of PVPP Oslomej 2 of 10 MW and PVPP Oslomej 3 of 100 MW, which will completely replace the existing coal-fired thermal power plant TPP "Oslomej" of 120 MW. The construction of

these photovoltaic power plants in the mine of the Oslomej plant, during the energy crisis is the first example in South-Eastern Europe, for which the European energy community reacted positively and expressed support to JSC ESM.

Keywords: photovoltaic power plants, thermal power plant, mine, energy transition.

HOUSING QUALITY IN THE CITY OF BERATI: AN ANALYTICAL APPROACH OF TYPOLOGY AND CONSTRUCTION

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Abstract

The city of Berati has a long urban history rooted deep down in ancient times. Different factors indicated the formation and the development of the city itself during his existence. Berati is well known as a city which begins as a city of fortification and churches, but as the time goes by, the city in its architectural layers had saved with jealousy layered a fortune of the domestic architecture. Being part of the Ottoman Empire for almost five centuries, it is obvious that traces of the previous eras will be ‘covered’ with the Ottoman presence, evident especially in the vernacular architecture.

This article offers an insight into Ottoman era patterns appearing in the town of Berati as a marvelous example of the Ottoman era vernacular house in the Balkans.

Keywords: Berati’s Ottoman era houses, typologies, building materials, vernacular architecture.

APPLICATION OF EXPERIMENT PLANNING AND ANALYSIS TO BUCKET-WHEEL EXCAVATORS IN OPEN-PIT MINES

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Abstract

In the conditions when either on the production practice ore on research there are numerous occasions when, the theoretical knowledge's are insufficient, the only way with which we can have a satisfactory acknowledge of different technological phenomena or processes remains always the statistical planning of experiments. For a general experimental study of such a process, we must take in consideration many indicators with the aim to overcome all the difficulties in the examination and optimization of such a processes according to the indicators. However, the problem solution that provides satisfactory reports of indicators can be achieved by implementing regressive analysis of experiment through comprehensive factor 2k plans. Such plans can be applied with adequate success in correlation of the technical and technological parameters in the practice of superficial usage bucket wheel excavator. In this paper is presented correlation of technical and technological parameters during the work of excavator SchRs 650 for working conditions in overburden on open pit mine Kosova.

Keywords: application of experiment, planning and analysis, bucket-wheel excavators, open-pit mines.

MANAGEMENT - THE CHALLENGE FACED BY THE MAINTENANCE SERVICE IN SCHOOL BUILDINGS

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Abstract

Modern management – inevitably enters into the function of maintenance within construction buildings. This paper discusses the basic characteristics, principles and ideas of traditional and modern management. Since maintenance is a very important activity in school buildings, then the function is quite complex and comprehensive, because they aim at maintenance management primarily corrective and preventive, and not only as well as safety at work and environmental protection. Management in maintenance is practically introduced by working on: Setting goals, Leading people, Motivating employees, Team work, etc. While contemporary maintenance conditions require new managerial approaches and concepts and seek to move beyond traditional methods and techniques of management and leadership, and move towards change and innovation management, in learning and knowledge management then the necessary role of leaders and teamwork but also in the maintenance function.

Keywords: Maintenance management, maintenance function, employee motivation, teamwork.

ACHIEVEMENTS OF SLOPE STABILITY ANALYSIS WITH DIFFERENT METHODS

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Abstract

The reasoning starts from the position that geotechnics represents an interdisciplinary scientific field which is composed of a series of close and interconnected disciplines that aim to define the interaction between the geological environment and engineering activity. The issue of choosing the appropriate methodology for field research is presented as one of the most important issues on which the successful treatment of any geotechnical problem depends. The irrefutable finding is that the selection of geomechanical parameter values is one of the most complex and sensitive tasks during stability analysis. Therefore, during the research, the fund that we have available for research and research of the location in question and the surroundings should be used in its entirety. During the compilation of the dissertation, as an example, the candidate will use the foundations and achievements from the field of geotechnics and stability analysis, in the Oslomej Kîçovo surface excavation within the Oslomej REK.

Keywords: Methods, GGU Stability, slide, plaxis.

IDENTITY, DIVERSITY AND COHERENCE AS VALUES OF URBAN BUILT HERITAGE

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Abstract

The character of urban built heritage is based on built heritage as: places of learning and improving community landscape, places of community improvement and places of urban re- functionalization. The values of this character are based on three main structural pillars:

1. Identity,
2. Coherence,
3. Diversity

Knowing that urban built heritage makes every city unique and establishes its identity, based on key urban/ architectural performance elements as: place character, architecture and materialization, unique character, symbolic and aesthetic values! As below are listed analytical indicators for evaluation each of them as values of the built heritage environment:

Identity	Physical
	Functional

	Social
Coherence	Legibility
	Variety
	Permeability
Diversity	Traditions
	Events
	Activities

The focus will be on the two study cases, that of Çarshia e madhe in Gjakova/ Kosova and city center in Oher/ Macedonia; as specific build environment, mainly as historical buildings and neighborhoods in those two cities. Through research will try to answer on raised research question:

How to establish an integrative concept of the urban build heritage development, based on interrelation Identity- Coherence- Diversity?

Strengthening that integrated urban planning will help institutions to combine sectorial activities and will give new inputs to cooperation between different interest groups and stakeholders through integrated

inter- structural and inter- sectorial development! This process will bring to the situation where is needed more information's and knowledge regarding new challenges on development requirement's, because when heritage conservation and urban planning join forces, the outcome might be improvement of living environment!

Keywords: built, heritage, urban, integrated, development, sectorial, policy.

STRIVING FOR INCLUSION: ANALYSIS AND EVALUATION OF URBAN PUBLIC SPACES IN TETOVO

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Abstract

In recent years, after the continuous migration of people from rural to urban areas, the majority of the World's population lives in cities. The increase in population is followed by an increase in diversity within the city, involving a great number of people with different characteristics and needs that must be accepted, fulfilled and respected.

Therefore, one of the current challenges in city planning is the design of inclusive spaces that is welcoming to all citizens regardless of their gender, age, nationality, economic circumstances, disability, identity, or religion. It is time that urban design revolves around the needs of the residents, and the built environment allows everybody to enjoy equal rights and access to every part of the city. Taking into account that in terms of inclusion the unbuilt environment is as important as the built environment, this paper will focus on the research of public spaces, as an important part of the urban landscape which should be enjoyed by all.

Through field observations in Iliria Square in Tetovo, this research aims to expand the ways in which we evaluate the capacity for inclusion in public space, find out whether users in public space experience these spaces as inclusive and if contrarily, find out why so and how to fight exclusion, how these places can be changed and improved.

This paper will hopefully support awareness of the design of inclusive spaces in the city and serve as a stimulus and valuable knowledge base for future research on this topic.

Keywords: Inclusive cities, inclusive urban development, public space, public participation, urban planning.

THE DIFFERENT REPRESENTATION OF GLASS AS A MATERIAL IN THE INTERIOR OF SHOPPING SPACES

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Abstract

Glass as a material is increasingly found in the segments that are part of modern interiors for living, working and daily activities of the modern man. This trend is more and more present in the modern interiors of shopping malls. Considering the design of every commercial building aims to attract the potential buyer with its exclusivity, transparency, neatness and attractiveness when displaying the products, glass is becoming a more common material that is used in arranging both the window and the interior itself in shops and shopping malls.

What is the representation of glass in the decoration of the interiors of commercial buildings and in what type and form does the glass appear, will be investigated by analyzing many different shops in two shopping centers from the area of the capital of the Republic of North Macedonia, Skopje, which were built and decorated in different periods from 20th and 21st century.

It is assumed that over time, the type, shape and representation of glass changed in much different segments represented in commercial premises. This paper will give an answer to what kind of glasses, with what structure, processing, thickness, shape and purpose of the same were used in different periods of time in commercial spaces.

The research methods used in this paper are the qualitative method, the real analysis and the productive analysis, the generalization method and the simulation method.

Keywords: glass, glass products, interior, shop window.

AN ANALYSIS OF THE NEED FOR INTRODUCTION OF PUBLIC TRANSPORT PASSENGER TRANSPORT IN TETOVO

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Abstract

Time series are variables of data and information collected in the past and used to predict data in the future. This data is collected at regular time intervals. Time series are also used to predict traffic intensity in various studies, demand in public city transport, as is the case with this paper, in which the need for introducing public city transport in the city of Tetovo is analyzed with the help of time series.

A city of any size with a healthy economy requires a transportation system that includes both private and public transportation because it can accommodate the variety of trips that the economy generates. The aim of the paper is to analyze public transport in Tetovo, to determine its intensity and structure, to examine which factors have the greatest impact on the demand for linear transport. It will be considered which trend model best fits the changes of that type of transport, and with the help of the analysis of the time series in the period from 2007 to 2015, the future movement of the demand will be forecasted.

Keywords: public transport, transport planning, number of passengers, time series.

FLOOR DESIGN IN LEARNING SPACES: SHOULD THE PLANNING AND IMPLEMENTATION PROCESS BE CHANGED AFTER THE PERIOD OF COVID-19

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Abstract

Each architectural space is defined by a certain surface or floor design presenting the final trespassing structure. Planning floor design and selection of materials directly depends on the functionality of the architectural space, with specific requirements in order to meet different standards such as protection against microbes, viruses and bacteria's.

The COVID-19 pandemic forced the accessibility, social gathering, lifestyle, and working environment to be changed to reduce the infection. As educational systems begin to resume operations amid, there is a complicated requirements on how learning will take place, to prevent any possibility of virus transmission in schools.

This paper deals with the issue of the influence of selected floor materials and construction solutions in learning spaces, with focus on how the existing school buildings can be adapted to meet the newly required safety measures, allowing students and teachers to feel safe and supported during the school day. Furthermore the paper aims to address the following research questions: How much awareness was raised in this issue during and after the Covid-19 period? Do we need new laws, rulebooks and standards for designing learning spaces for higher education?

The COVID-19 pandemic has made the built environment an important source of prevention and control, architects and researchers have thus been seeking countermeasures since the beginning of the outbreak. Achieving sustainable floor design it is very important in order to create optimal learning spaces while maintaining the recommended social and distancing guidelines.

Keywords: floor design, planning, learning spaces, selection criteria, COVID-19.

INTRODUCTION OF MODERN URBAN TRANSPORT SYSTEMS

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Abstract

Transportation has been an important element for the formation of life in cities since the appearance of the first cities. As the general socio-economic conditions and cities changed throughout history, so did the needs and conditions for transportation in cities. The relationship is two-way, as such a situation of organization of transport has greatly influenced the shape and form of organization of the city.

The way and type of organization of the transport system in urban areas depends on:

Urban mobility: Ensuring the possibility of smooth, fast, safe, efficient movement in the territory of the city and in other urban environments, as well as from,

Urban accessibility: Ensuring access to individual facilities and areas in the city and in other urban areas.

The purpose of this paper is how to introduce a modern effective and efficient system of urban transport and its impact on increasing safety and reducing traffic congestion, especially for the preservation of an ecologically clean urban environment.

This paper will analyze the significance of the transport system in urban areas as well as its introduction and realization in all subsystems and segments in the traffic system throughout the cities and in other urban areas. Of great importance is the way of introducing or improving urban transport systems, as well as its effects, as well as finding an efficient way to implement the same.

At the end of this paper we will have the conclusion where it will be determined how the existing urban transport systems should be introduced, perfected or justified, as well as its effects, its impact on the reduction of traffic congestion, for the environmental and economic justification of reducing the number of traffic movements and accidents, as well as more relaxed traffic.

Keywords: transport systems, urban environments, systems, means of transport.

MEASURES OF REHABILITATION OF UNREINFORCED MASONRY SPORTS FACILITY WITH IRREGULARITIES

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Abstract

Taking into account the seismicity of the territory of North Macedonia, as well as the significant number of existing masonry buildings, it became necessary to establish a procedure for assessing the seismic resistance of these buildings, as well as the need to improve their carrying capacity by applying various strengthening measures.

The sports halls as accompanying structures were built of unreinforced masonry. The literature in this area was investigated, regarding the estimation of the seismic capacity of this type of building, the characteristics of URM buildings, and the types of damages as well as strengthening measures.

For the selected building, the sports hall "Partizani" in Debar, the seismic load capacity of the walls was controlled according to the valid rules for seismic design of masonry buildings. A numerical analysis was carried out and the structural response was determined. The methods for strengthening by applying steel ties and steel beams on the upper part of the walls were selected, as techniques for improving the global seismic behavior of the building with vertical irregularity. A model of the structures reinforced with steel elements was made and an analysis was carried out. Using the obtained results from the analysis, appropriate comments and conclusions were given

regarding the behavior of the masonry structures, their seismic capacity, and the effectiveness of the selected strengthening procedure.

Keywords: Seismic capacity, Masonry Structures, Unreinforced Masonry, Strengthening procedure.

ANALYSIS OF THE FIRE BEHAVIOR OF COMPOSITE COLUMNS OF STEEL AND CONCRETE IN MULTI-STORY BUILDINGS

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Abstract

Purpose: Unwanted fire is a destructive force that causes thousands of deaths and severe property damage each year. Fire is a spontaneous process of uncontrolled combustion with negative effects expressed through the destruction of material goods and endangering people's lives. Many of the artificial fires were caused by wars, other weather disasters, lightning, but also by poor construction techniques used in the construction of buildings with highly flammable materials. The main factor that motivates us is to design a building that will have high fire safety with which there will be no great economic and human losses due to its premature collapse.

Method: Analysis of the fire resistance of construction structures according to technical regulations: The action of high temperature on interconnected-composite structures causes a decrease in the mechanical properties of the two components of the component (concrete and steel), and thus decreases in drastically their load capacity, then they cause major damage and breakage.

Fire resistance design of building structures is based on a certain fire scenario. Here are some of the types of fire scenarios that apply around the world. In most European countries, a standard fire time curve according to ISO 834 and a parametric curve are used, the standard curve is very close to the time-temperature curve used in the

United States, ASTM E119. (American Society for Testing and Materials). Constructive behavior of composite elements in multi-storey buildings exposed to high-fire temperatures, according to Eurocode 4, part 2. For composite columns, the control procedure: - bearing capacity of cross section in compression and in moment (bending), - horizontal section, - the bearing capacity of the longitudinal section. Composite columns are considered, as unprotected steel elements, partially and completely concreted, in aspects of the structural scheme as freely supported or embedded elements. Nowadays, several software packages determine the fire resistance of the load-bearing elements of a composite structure. One of the most widely used software packages in most European countries is ArcelorMittal, which has been used in the analysis of fire resistance of structural elements-pillars of a multi-story building.

Results: The fire resistance of the pillars is calculated for three cases/ three types of pillars with a height of $H = 3.3 \text{ m}$ / - as an unprotected pillar made only of steel profile; - protected with partial concrete cladding and fully concreted steel pillars. Fire resistance analysis of composite columns. The room temperature is taken as the initial temperature and the heating from the induced fire is done gradually according to the standard temperature time curve (ISO 834). - complete plasticization occurred at the critical temperature of $684 \text{ }^\circ\text{C}$ (degrees Celsius), a temperature that, as a result of the ignition of the burning material, is reached for a time interval of $A_t=28$ minutes, in the case of the unprotected pillar that corresponds to the resistance class R15, which is smaller than what is provided by the regulations (ISO 834). For the partially concreted column, a class of fire resistance of R 120, this is a resistance that is expected for such objects, while in the case of fire resistance for completely concrete pillars, the fire resistance is R180, which is greater than the previous one, which is R120.

Conclusion: Unprotected pole - the critical temperature of collapse - collapse is $T_{kr} = 673^\circ\text{C}$ - The fire resistance of the pole in terms of

time is $A_t = 28.00\text{min}$ - the fire resistance class of the pole is: R 15, which is the most smaller than that provided for this type of elements R_{min}120. The partially concreted column is carried out according to the rules provided by Eurocode 4 for steel and welded concrete. Constructions (Part 4). In the fire calculation, the standard temperature-time curve is used as in the previous elements. the resistance which in this case is equal to that provided for Class R 120. The fire resistance of the partially concreted pillar is R 120min and is equal to that provided for this type of element. The fully concreted pillar has a fire resistance of R 180 min and is larger than the previous one by regulation.

Keywords: composite constructions, composite columns, fire resistance, steel profile, concrete.

WALL CONSTRUCTIONS ACCORDING TO EUROCOD 6 - MASONRY SYSTEMS

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Abstract

Purpose: Wall constructions represent the type of the oldest building materials that are used in construction today. The first bricks were made of unbaked mud or clay, later baked ones, and were used in the process of building buildings in the form wall, this material has been used a lot, especially in the past, they have found wide application in different social environments for the reason that the process of production and use has been quite simple without the need for any special technology. In the country, taking into account the fact that the new standards, in addition to the old JUS-standards, there are temporary-regular principles for these types of building material, but following the steps of the countries of the European Union, which in its member countries use norms for walled constructions and that these problems are handled by EURCOD 6. And the need to follow the contemporary trend of construction imposes us to follow these norms and in the future to be able to design, calculate structures from this type of material which is used all over us and the world.

Methods: In this paper, the methods and principle of calculation of masonry structures according to European Norms (EUROCOD 6) are presented, treating and calculating two types of bricks with brands M10 and M15 and two types of mortar as binders with brands M5 and M10. And the realization and calculation methods are given.

Design: Part of the wall of a residential building with masonry is presented and two examples are given where the principle of calculation according to Euronorms-EURCOD 6 is shown.

Results: From the comparison of the two variants, from the given static influences with stress control in a masonry wall. The obtained results, for comparative data where we have:

- Wall thickness: 25cm and 38cm
- Mortar brand: MM5 and MM10
- Brand of wall element: MO10 and MO15 Results were given for: - Control of pressure (compression); Control of cracks; Sync Control:

Conclusions: During the calculations and comparisons of the results, we come to the conclusion that the thickness of the wall for which the calculation was determined does not meet the condition of cracks in the wall, which means that we have to increase the thickness of the bricks or increase the brand of mortar , however, the difference will be very similar to the previous comparative values, therefore, it is necessary to adopt a material that accepts these forces in the crack or to think about a more meritorious solution for the construction where other types of bricks will have to be used, the reduction of loads , reducing the distances between the walls of the building, etc.

Keywords: Masonry, wall, brick, mortar, norms.

DIMENSIONING OF THE MAIN BEAM OF A PRODUCTION PLANT FROM PRESTRESSED CONCRETE

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Abstract

Purpose: The development of small and medium-sized enterprises in the private sector as imperatives of the time for the construction of low buildings but with large spaces for the needs of small non-polluting industry in different environments, the demand of investors in the private social sector is the construction of the above-mentioned buildings but with large spaces for the needs required by the design task imposes the preparation of the main supports with large dimensions, in this paper the principle of dimensioning and calculation of beams up to 30m, which cannot be prepared with these dimensions in factories, is presented for the production of prefabricated products, but the one must be prepared in the place where the construction of the building-object takes place, since the beam with a length of 30 m cannot be transported due to inadequate road infrastructure.

Methods: Dimensioning of the main beam - supports for a space of 30m with prestressed concrete brand MB 30, MB 40, MB 50, MB 60 and with prestressing class 0.6; 0.8; 1.0 where the solution with the approximation method is used. Dimensioning of the Rigel-beam constructive element is done for cable prestressing, determination of the method for: - Filling-incorporation of concrete -Type of soft armor - The time of advance - Load according to the purpose of the object, the place where the construction takes place (altitude) - The

part of the beam where the load is more pronounced, larger - the most unfavorable position - Shear forces in different cuts, at the beginning of the beam in the middle and other places. - Necessary measurements of honors, deformations, reductions, loss of prestressing seal in relation to time etc. -Parameters and geometric indicators of transverse and longitudinal sections.

Design: Analysis of the most meritorious cross-section of the Rigel-beam

Results: Results for the brands of prestressed concrete mentioned above, results for normal values, results from checking values indirectly (Fizo zone), results of reinforcement for acceptance of values from the tensile force, checking the coefficient of safety against fracture, control of tangential parts, value from the calculation of reinforcement in the area of application of the prestressing force, value - results from the calculation of deformations, the weight of the beam and the amount of material and details. Conclusions: After the dimensioning of cross-sections with different heights $h=150\text{cm}$, $h=160\text{cm}$, $h=170\text{cm}$, $h=180\text{cm}$ with brands MB 30, MB 40, MB 50, MB 60 for the same loads, it was found as a final conclusion of a beam with a height of $h=180\text{cm}$ is acquired as the most meritorious for the given area, with cross-section,,I,, with the geometric characteristics given in the work, and with the mechanical characteristics, cable routing, loss of prestressing force and many other values that are necessary for this type of prestressed concrete beams.

Keywords: Prestressed concrete, anchors, cable, concrete grade, load, soft reinforcement.

CHANGES AND THE ROLE OF LIVING ROOM IN INDIVIDUAL HOUSE: CASE STUDY KOSOVO

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Abstract

The living room is one of the main housing units. Living room considered as a common space for all the residents inside the living spaces. In Kosovo, the living room unit it is considered the central part of the house which weaves daily activities of residents such as family gatherings, watching television programs, reception of guests, games etc.

The research aims to study the role and evolution, from the “kulla” house to the application of the last buildings in Kosovo in lasts years. The change of using living room, the way of life, the number of residents in the house as well as the mentality of the population.

During the research, it is notes the change of the surface of the unit, the function and utilization of the space, the connection with other functions of the house, the interior, the material using in interior design and the lighting in the residential houses in Kosovo in 21th century.

Keywords: Living room, daylight, surface, evolution.

RESIDENTIAL PREFERENCE CHARACTERISTICS IN THE LATE 20TH CENTURY GATED COMMUNITIES OF BATIKENT, ANKARA

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Abstract

This paper investigated the housing preferences among the residents of late 20th-century gated community settings. Batikent, a successful gated community-based urban housing development initiated in the 1980s' Ankara in Turkiye, was chosen as a case study location. The aim was to reveal the desired housing types among their long-term residents and the capacity of their current settings to maintain the perceived residential quality. Gated community typologies only included those constructed in the Batikent region, and thus, their socioeconomic classification is automatically confined to middle-income families. Based on the height of the buildings they host, the four easily distinguishable gated community typologies within the given location are 1- to 3-floor single-family dwellings, and low-, medium- and high-rise apartment buildings. A survey of 217 inhabitants was carried out to gauge their perceptions of residential satisfaction and preference traits. Single-family dwellings were the most preferred regardless of the inhabitants' current housing type, followed by low-rise apartment buildings. The results were unaffected by additional variables like proximity to transit hubs, the broader characteristics of urban neighborhoods like population density, or demographic variations like age, gender, income level, length of residence, or ownership status. Batikent residents mainly tend to relocate themselves within the same district. Its perceived

qualities were thus further investigated, and single-family houses showed more satisfaction with nature bonding. Social interaction, social bonding, and place identity were the other qualities behind their preferences. Overall, the research revealed that either it is the living habits or the spatial qualities of the gated communities behind the inhabitants' residential preferences.

Keywords: Residential satisfaction, housing typology, gated community settings, 1980s, Ankara.

MUSEUM ARCHITECTURE AS A TOOL FOR A SENSE OF IDENTITY IN SKOPJE

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Abstract

Museum architecture is significant in conveying a city's identity since it represents the historical, cultural, and social context in which it is located. It is a combination of interactive duality between the exchange of scenarios, which are situations where existing and potential resources, signs, and symbols are controlled, transferred, and transformed by the identities that individuals use as their agents, and interaction systems, which are defined by a more abstract notion that includes the joining of flows and transformations of resources across time and situation into a synthetic whole as a social system. Examining the architectural aspects of museums in Skopje, this study offered insight into the city's identity, both past and present. Due to multiple political and ideological influences throughout the years, Skopje has been defined as a battleground for the remodeling of the city's identity. My approach of applying a critical analytical technique is also promising since it allows for a comprehensive evaluation of the available material, the identification of potential biases, and the development of well-supported conclusions. Overall, this study contributes to a deeper understanding of Skopje's identity as well as to a larger discussion of the function of museum architecture in the portrayal and formation of identity patterns in the city.

Keywords: Museum architecture, Skopje identity, re-reading city identity, identity pattern.

UNIVERSAL DESIGN IN HIGHER EDUCATION IN NORTH MACEDONIA: MODEL FOR IMPLEMENTATION

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Abstract

Universal design and accessibility have become essential concepts in architecture that aim to provide inclusive and equitable access to spaces and environments for all individuals, regardless of their abilities or disabilities. With a growing understanding of the benefits of accessibility in design, many architectural schools are incorporating courses and programs focused on universal design and accessibility to train the next generation of architects.

The paper analyses the study programs of the Universities in the Republic of North Macedonia, emphasizing the need to open the debate for incorporating universal design and accessibility principles into the educational program. It then develops models that can be incorporated into study programs in these institutions.

In order to increase awareness and a sense of responsibility in upcoming generations of architects, who are primarily responsible for determining the environment in which we live, these educational models place equal emphasis on the human aspect of universal design and accessibility as well as the predetermined regulatory and legal aspects of these topics.

As a result, universal design and accessibility are being increasingly recognized as essential elements of modern architecture, and architectural schools are reacting by providing more thorough instruction in these fields.

Keywords: Universal design, Accessibility, Study Programs, Models, University, North Macedonia.

SOLAR RENOVATION CONCEPT IMPACT ON ARCHITECTURE

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Abstract

Modern solar architectures are based on direct (passive), indirect (active) and combined (passive and active) absorption of solar radiation. Building geometries and surrounding area characteristics can affect the availability and use of solar energy and the energy demands of a building. The shape of a building and the urban conditions in which it is located directly affect the availability of solar radiation. Most solar retrofit concepts claim to affect a building's thermal energy requirements. That is, reduce the heat supply of HV and/or hot water. However, most solar renovation projects also include traditional renovation activities (such as additional insulation or window replacement), so the specific benefits of a solar property are masked in the overall impact. Often some 'active solar' schemes can also be viewed as building energy efficiency measures, and some applied schemes require a more clearly defined aspect of solar. The main solar retrofit concept analyzed in this study is the clamshell/glazed façade combined with façade-integrated photovoltaics, which can affect the estimated energy performance of the building. The results discussed in this study include different public buildings in North Macedonia

Keywords: Energy efficiency, solar concepts, renovation, photovoltaic systems, energy efficiency, public buildings.

DETERMINATION AND EVALUATION OF DATA FLOW IN TECHNOLOGICAL SYSTEMS THROUGH THE INTEROPERABILITY OF ELECTRICAL AND COMPUTER CIRCUITS

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Abstract

In different industrial systems and in different industrial sectors, a specific analysis must be defined in the context of determining the data flow and its direction to the end elements and vice versa. This work is based on the analysis of the types of data that are transmitted, the orientation and the management process of the connection in the electrical circuits and the connection with the computer system. In order to create a circuit diagram, it is required to establish a bridge connecting the electrical circuit and the computer circuit. This process enables us to establish a system that can be specifically controlled by a command system, which plays the role of the main operator. The paper presents specific schemes and blocks that represent an integrated system of elements that participate in confidentiality and concrete positioning of elements in the given structure. In this paper, the state of the data values is determined, and characteristic evaluations of the parameters that take part in the construction of this scheme are given with the aim of handling a technological process, a process that applies to different types of products, depending from the nature of the work. The main goal is the management and systematization of the generalized work to create an approach that is as reliable and based mainly on a single system that offers high flexibility in the work, of the machines themselves and the elements that are part of a technological process.

Keywords: Technological System, Process, Management, Computer, Data flow.

THE APPLICATION OF MATLAB FOR THE GENERATION OF EFFECTIVE VALUES IN THE TECHNOLOGICAL MANAGEMENT PROCESS

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Abstract

During the technological process, the need to overlap the effective values is often presented in the sense of finding the relevant parameters that affect the management of the technological process. The use of Matlab or other relevant applications very quickly affects the collection of data and the system of values according to the given priority. The purpose of this paper is to incorporate applications that can be included in the management process, obtaining results, and adequately reflecting the obtained values, graphs and finding the corresponding concrete structure to see the flow of a process as closely as possible.. Specifically, the process is for example, the recycling of material in the form of plastic, which affects not only the increase in production capacity, but also increases the effective level, and to have the clean environment, to increases the optimization criteria in terms of the maximum utilization of the material etc. The goal of the paper is the computer system management through the application, specifically the use of Matlab, but also the use and the other applications with the same nature of use. The paper will also deal with the collection and systematization of data in a database-application, which is connected to applications such as Matlab, to save and to create connections with other platforms in the framework of production and service; such is the internet platform and the deployment of a web browser that gives a more generalized direction in terms of use; service and management of resources at different distances - locations that have direct access through web technologies

or other computer network resources. Therefore, all this includes the way of integrated management of some systems and applications to create a more optimized effectiveness of the technological process.

Keywords: Technology, Matlab, Applications, Web browser, Computer system.

USING GEOGRAPHIC INFORMATION SYSTEMS TO IMPROVE TRANSPORTATION PLANNING IN NORTH MACEDONIA

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Abstract

The development of Geographic Information Systems (GIS) has been driven by advancements in computing technology and data collection methods. GIS have become a critical tool in transportation planning, enabling planners to store, analyze, and visualize spatial data related to transportation networks, land use patterns, and population distribution.

Geographic Information Systems (GIS) are powerful tools that enable the capture, storage, manipulation, analysis, and presentation of geographic data. In the Republic of North Macedonia, GIS has been successfully applied in various sectors, including traffic engineering.

This paper provides an overview of GIS and its components, followed by a discussion of successful GIS projects in North Macedonia. The paper then explores the ways in which GIS can be better utilized in North Macedonia, including enhancing data quality, expanding GIS use, collaboration and data sharing, capacity building, and public engagement. The paper concludes with a summary of the key points and recommendations for future work in this field. By leveraging the power of GIS, Macedonia can better address complex challenges and achieve sustainable development.

Keywords: Geographic Information Systems (GIS), transportation planning, data quality.

ARCHITECTURAL FEATURES OF MOSQUES IN THE BALKANS OF THE OTTOMAN PERIOD

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Abstract

In parallel with the development of the Ottoman social structure, a wide variety of functional structures were built in the Balkan cities as well as in Anatolia. These structures, of course, not only carry many features of the architecture of the period they belong to, but also show their developments too. In addition, the solutions used with structures such as mosques, madrasahs, inns and baths emerge as concrete data on how strong the cultural interaction between the regions is and at what points it is concentrated. However, although the transfer of experiences from one region to another and the existence of an Istanbul-based inspection system in general lead to similar preferences in structural systems, limited applications related to different regions constitute the characteristics for that region. The study focuses on development of layouts, by extracting a certain typology of the development of mosques in the Balkans and the architectural features used in construction of this kind of buildings.

Keywords: Ottoman architecture, Mosque, Balkans, Typology.

THE INTERACTION OF SIMPLE STATES IN COMPLEX ARCHITECTURAL RECTANGULAR SHAPES

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Abstract

This research explores simple states of architectural shapes as a primary generator for the development of a technique for computational design. This paper gives an overview and examines in-depth the interaction and the logic between simple states, and their dominance based on daylight qualities they offer in articulated shapes of built forms. Simple states can exist as both dimensional and non-dimensional shapes, and their ability to keep intact the topological and dimensional qualities of architectural shapes can contribute to developing tools and methods for analysis and synthesis in architectural practice. An analysis of different case studies of different building types with an emphasis on hospital buildings is presented in this paper and their respective simple states are discussed.

Keywords: simple states, interaction, logic, dominance,

NEW TYPES OF HOUSING BETWEEN CITY AND VILLAGE, CASE STUDY - GAJRE VILLAGE, TETOVO

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Abstract

The modern urban reality is increasingly erasing the spatial boundaries between urban and rural places. It is said that the urban is a global reality and that the city is no longer a discrete given, but it is absorbed into it. But exactly such a dynamic raises a series of questions about the uniqueness, programmatic, spatial, and socio-cultural of the border points between one and the other domain, between the city and the village.

What should be the architecture in rural areas on the threshold of cities to reflect the modern urban needs but still recognize and protect the identity of the village?

The subject of this research is the residential texture of the area in Village Gajre with its position near Tetovo (6-7 km), with an altitude of 800-850 m, which lies on the slopes of Shar Mountain. In the process, we get acquainted with the specificities that this rural part carries within itself, as in its residential texture we can recognize the traditional spatial and social schemes of the houses placed in different places in the plots, different typologies of houses concerning the topography of the terrain, the foundations in terms of whether they are on flat or sloping terrain, height variations, archetypes, outbuildings, etc. so that later they find their application in the process of transformation of the residential texture.

The research of the residential structure called for both domains, how to build in a village that is near a city, not to be seen as part of the city, but not as if the city has adopted the village, to see the ratio between the city and the village

Keywords: village, street, house, group form, residential texture, typology.

MODERNISM'S INFLUENCE ON THE ARCHITECTURAL STRUCTURE OF MALA STANICA IN TETOVO

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Abstract

In an effort to modernize the states under its leadership, Socialist Federal Republic of Yugoslavia (SFRY) promoted the modern spirit in city planning and architecture. The modernization of cities in SFRY in general and in North Macedonia in particular, along with the modernization of social and cultural life, fostered a conception of city life significantly different from the traditional way. As a consequence, the process imposed a radical transformation of the city's overall configuration, its public and private buildings, and their utilitarian, aesthetic, and experiential performance. Although planned interventions were only partially implemented in certain areas of Tetovo, they left an indelible imprint on the city and continue to influence its ongoing development.

It is difficult to fully understand how the process of modernization has affected Tetovo's development in the past and how they will affect it in the future due to a lack of data necessary to perform a thorough analysis. The traces of the changes that have occurred in Tetovo during this time period in terms of the city's configuration have been documented and studied to a certain extent, but the manner of transformation of architectural buildings has only been described in broad strokes. The rapid transformation and replacement of these buildings with contemporary ones will completely eliminate and render them unmemorable. Consequently, this study aims to lay the

groundwork for future comparative and comprehensive analyses of Tetovo's urban development by exploring initially architectural structure of one of the period's most representative neighborhoods, Mala Stanica, also known informally as Ajduchka.

Keywords: Tetovo, modernism, neighborhood, Mala stanica, Ajduchka.

THE INFLUENCE OF “NON-PLACES” THROUGH DE-CONTEXTUALIZATION AND RE-CONTEXTUALIZATION OF HIGH-RISE BUILDINGS IN POST-SOCIALIST TIRANA

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Abstract

This study examines the development of high-rise buildings in the post-socialist period Tirana. These buildings in majority were constructed at the expenses of sites which were public space. In other cases, they were built on sites which were public land, but were returned to the pre-socialist period owners. These high-rise buildings were planned in the master plan of Tirana, conducted by the French company “Architecture studio” and after that for most of the building were organized international competitions by The Albanian government or Tirana municipality, which at some point worked as an international cover to undertake such urban operation. The competitions were won by well-known international design studios.

This study focuses on the impact that the high-rise buildings have in de-contextualizing the existing context and examine the newly created urban context. To achieve this, we select five high rise buildings which are: Forever Green Building Tirana, Downtown Tirana, Air Albania Tower, Garden Building Plaza. Apart from analysis of the building’s adaptation to the urban context which conducted in architectural and urban level, the study measures the de-contextualization and re-contextualization by interviewing 125 Tirana citizens, 25 per each high-rise building.

The results in overall show that the interviewed dwellers are divided as most of them (three buildings) has reported as positive the newly created context after the construction of skyscrapers. On the contrary in all the buildings, (except one who reported differently) the dwellers have reported them not to be the best solution, pointing out the de-contextualization they create with their surroundings.

Keywords: Non-Places, De-Contextualization, Re-Contextualization, High-Rise Buildings, Post-Socialist, Tirana.

ECOLOGY AND THE IMPACT OF ANTHROPOGENIC ACTIVITIES ON ENVIRONMENTAL POLLUTION

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Abstract

Taking into consideration the fact that RNM has been part of the group of countries with high environmental pollution for years, which is proven by many world institutions, the main purpose of this paper was to determine which activities have influenced the pollution of the living environment and specifically the pollution of air.

This research covers a longer period based on preliminary data and studies on the amount and type of fuel used in various anthropogenic activities. By following and analyzing air pollution from automatic monitoring systems and the annual reports provided by the Ministry of Environment and Spatial Planning, we will make a comparative analysis of air pollution before and after 2012, the year when the new standards for air pollutants came into force.

The results from this research show that the standards for the limit values of air pollutants have been much lower, which means that the presence of pollutants in the air with higher values was not considered as pollution. In 2012, stricter standards for air pollutants came into

force and the state is obliged to comply with them. The results also show that air pollution has had alarming proportions for many years as a result of the use of fossil fuels.

The collected data showed that the main source of environmental pollution in Tetovo and its surroundings originates from anthropogenic activities, mainly from industry as a result of the large use of fuels. Although before 2012 air pollution was as great as after 2012 until 2016, citizens did not have the right and legal opportunity to protest and oppose. This was made possible with the entry into force of new legal regulations.

Keywords: environment, anthropogenic activities, pollution, fuels, PM10 and PM2.5 particles.

IMPACT OF THE TYPE OF CONSTRUCTION CONTRACT ON THE PROJECT DURATION IN NORTH MACEDONIA

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Abstract

Every contract for construction project contains project deadline as an essential element. In that relation, the type of contract that is signed and its elements have an impact on distribution of responsibility and duties among project participants and to rich the construction goals within the contracted construction time. Therefore, having a model for forecasting the project time delivery related to the type of contract is useful for project participants. Hence, the aim of this paper is to develop such prediction model. For 110 Infrastructure projects from North Macedonia, data were collected for the type of project, type of contract, real time of construction and institutions that financed these projects. Data were analyzed using support vector machine (SVM) – recently one of the most accurate predictive models and the software package DTREG. The results of the analysis revealed that the type and conditions of the contract have direct impact on the construction time and the infrastructure projects realization.

Keywords: construction contract, infrastructure project, construction time, forecasting, North Macedonia.

APPLICATION OF CONIC SECTIONS IN ARCHITECTURE

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Abstract

In this paper we will present the equations of conic sections and the application of conic sections in the field of architecture. Mentioning some of the projects realized and under construction by famous world architects, these projects that present special, unique buildings that have been built on the geometrical principles, namely the conical sections which have given special and immortal greatness, beautiful to the human eye and feeling balanced.

These mentioned projects belong to the Balkan area, respectively the state of Albania and North Macedonia. The architecture of which is affecting modernization every day.

Keywords: Conic sections, application, architecture, construction.

A SMART APPLICATION OF GENETIC ALGORITHM FOR TOOLPATH OPTIMIZATION IN WATERJET CUTTING

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Abstract

The problem addressed in this paper is related to the tendency to search for new tool path optimization techniques during CNC machining, especially in cases where we have different combinations of the main and idle movements of the cutting tool in case we have many possible combinations. Finding the shortest path constitutes to be an important cost optimization element, as a separate problem but also the basic background of a one-dimensional evolutionary search and a suitable field for the application of artificial intelligence. Various software have applied various optimization mechanisms and techniques, but research has shown that there are still opportunities to apply new techniques and especially those with intelligent algorithms.

The objective of the research was to find and build an acceptable model for quick decision-making in cases where many factors affect the process in different ways. At the beginning, a single-objective study and research is done, respectively of a criteria and this objective is to find the shortest path of the sequence of the cutting tool in drilling the pattern holes

Searches have been made in different CAD/CAM softwares with different ways of moving in these pre-defined paths and the one that has resulted as the shortest, has been taken as the representative

optimum by comparing it with the genetic algorithm programmed in the MATLAB scientific environment.

Finally, all optimal distances within these software and algorithm runs are presented, compared and evaluated. It was found that the genetic algorithm provides the best optimum, i.e. the shortest distance compared to other softwares. This has sent us the finding and recommendation that, for the future, even more efforts should be made to implement this algorithm in the preparation of fixed cycles

Keywords: genetic algorithm, optimization, multi-objective, waterjet.

DESIGNING A ROBOT CONTROL METHOD BASED ON THE PREDICTIVE MODEL WITH NEURAL NETWORKS

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Abstract

This article presents the efforts to build a predictive model for controlling the movements of the robot even in cases where the action information is not complete. For this we used a model for measuring brain signals during its activity. Electroencephalography (EEG) involves the study of recording these electrical signals that are generated by the brain when physical actions are ordered in the body.

For the training of the algorithm, we used the k-number method called k-NN, which tries to classify an unknown sample based on the known classification of its neighbors. The implementation and training of k-NN is done through the Classification Learner of the MatLab software. After a certain number of interactions, the acceptable accuracy of the model has been achieved. The confusion matrix was also used as a visual method to evaluate the accuracy performance.

This model is used than to predict the movement of the wheels of the mobile robot. The implementation of the predictive model was done in Simulink. By changing the speeds of the two wheels, we can change the trajectories that the robot takes. By raising the left and right hand, we speed up the movement of the left wheel and the right respectively.

The results show that the method kNN classification achieved a high degree of accuracy, indicating its potential applicability in the control of robots for differential action. Overall, kNN classification of EEG signals represents a promising approach for implementing robots in a variety of applications where precise movement control is required.

Keywords: Predictive movement, kNN model, robot control.

APPLICATION OF A MULTIDISCIPLINARY APPROACH FOR THE TECHNICAL PROCESSING OF TRAFFIC ACCIDENTS

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Abstract

Traffic accidents are complex phenomena that occur within the intricate driver-vehicle-environment system. This means that the occurrence of traffic accidents depends on a large number of factors arising from its subsystems. In many cases the causes of traffic accidents lie in the "center" of this system - in the driver who, with his behavior and actions, disturbs the balance of this system. Therefore, in order to overcome such situations, the authorities must continuously control the behavior of traffic participants, especially drivers who are responsible for operating a potentially dangerous vehicle that can cause serious damage to the environment, or endanger human lives.

The environment as a subsystem within the aforementioned driver-vehicle-environment system in which traffic takes place, also has a significant influence on the occurrence of traffic accidents through the condition of the roads on which traffic occurs (in rural or urban areas) and the installation and regular renewal of adequate traffic infrastructure.

The vehicle as a complex technical system with its overall technical functionality i.e. the proper functionality of all technical systems incorporated into its construction, is also a significant subsystem within the complex driver-vehicle-environment system. For these reasons, every vehicle must be functioning properly before entering traffic, which again depends on the conscience of the driver who operates the vehicle.

Within this paper, and with the help of specific examples, we'll present a review of the need for a multidisciplinary approach in the technical processing of traffic accidents, with the ultimate goal of determining the dynamics and manner of occurrence of the accident, and of course the reasons that led to the disruption of the complex driver-vehicle-environment system and caused the accident.

The purpose of this paper is to derive conclusions regarding the possibility of a more frequent involvement of experts from several different fields who will aid in the process of successfully determining all technical aspects that lead to the occurrence of accidents and develop proposals and solutions that will reduce the reoccurrence of such accidents.

Keywords: driver-vehicle-environment system, vehicle, technical system, material traces.

ILLYRIAN-ARBERIAN AND THE EARLY INHERITANCE OF THE CHRISTIAN CULT

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Abstract

The social, political, economic, social and cultural circumstances that existed at that time in the Arab world brought one of the most emblematic figures in the entire history of mankind, Jesus Christ (Messiah). Jesus Christ was born as the savior of evil and the abandonment of many idols, and in their name the impoverished population was mistreated, violated, enslaved to the point of inhumanity.

The period in which Christ lived involved two different religious worlds, the Jews on the one hand and the pagan Romans on the other. Both of these religious worlds were going through ideological turmoil at the moment, where great changes were expected. Jesus Christ was born in the period of the emperor Augustus and died in the period of the emperor Tiberius. He brought another image to the religious spiritual world, which, of course, had its roots in the Jewish religion, but at the same time broke away from it and continued an autonomous path in itself.

With the birth of Jesus Christ, a new religion was born, which began to spread even in the Illyrian - arboretum regions, a religion that is embraced by this population, which, in addition to preaching, also takes on the role of distribution and cultivation in various parts of Illyria and more wide.

Keywords: Faith, monotheism, Christianity, basilica, cult.

**6th International Scientific Conference of the Faculty
of Medical Sciences**

MEDICAL SCIENCES

MAY-GRÜNWARD-GIEMSE STAIN OF PERIPHERAL BLOOD SMEAR

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Abstract

This is the most widely used stain for blood smears. Similar to other methods in histology, it is based on the electrostatic interaction between dyes and target molecules. Solution solutions contain methylene blue (a basic dye), bound azure (also a basic dye), and eosin (an acid dye).

Basic dyes carry net positive charges, therefore they stain the nuclei (due to the negative charges of the phosphate groups of DNA and RNA molecules), granules of basophils, granulocytes and RNA molecules of the cytoplasm of white blood cells. Eosin carries negative charges and colors red blood cells and granules of eosinophilic granulocytes. It was originally thought that neutrophil granulocyte granules were stained by a “neutral dye” that was formed when the aforementioned dyes were combined, but the exact mechanism is not clear.

Results: Cell type/quantity/microscopic characteristics

RBC 4 – 6 x 10¹²/liter Pink / brown discs; clearer in the middle due to their concave structure.

PLT 0.2 – 0.3 x 10¹²/liter Purple colored granules; much smaller than RBC.

NEUT 50 – 70 % Cytoplasm transparent, pink / blue; 2-5 lobes bright purple core.

LYM 20 – 40 % Transparent purple cytoplasm; a large purple-pink core.

MONO 3 – 8 % Largest of leukocytes; transparent, pink/blue cytoplasm with pink/purple horseshoe-shaped nucleus.

BASO 0.5 – 1.0 % Cytoplasm rich in dark blue granules nuclear staining dark-blue.

Keywords: Bound azure, eosin, RNA molecules, cytoplasm, granules, leukocytes, BASO.

ANEMIA OF CHRONIC RENAL FAILURE

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Abstract

Chronic Kidney Failure (CKF) is a gradual, progressive, irreversible loss of kidney function accompanied by a gradual decrease in Glomerular Filtration Rate (GFR-Glomerular Filtration Rate), as a result of congenital or acquired diseases of the kidneys. Patients with CKF in the initial stages manifest an anemia which is normocytic, normochromic, hypoproliferative, therefore, its treatment should be started in the initial stages in order to improve renal function and increase the production of erythrocytes(Er). Treatment more adequate is the use of erythropoiesis stimulating agents (ESA) and iron, folate and vitamin B 12 supplements. The mechanisms involved in the anemia associated with renal anemia are diverse and complex, but most often it appears as a consequence of the reduction in the production of the hormone- erythropoietin(EPO), the hormone which is mainly secreted in the kidneys, its main role is the stimulation of erythropoiesis- the production of erythrocytes. Manifestations of renal anemia begin to appear when GFR falls<60 ml/min/1.73m². According to the National Kidney Foundation (NKF), Kidney Disease Outcomes Quality Initiative (K/DOQI), anemia is defined when hemoglobin values (Hb) are <12 g/dl for females and <13.5 g/dl for males. Treatment with EPO should be started with 50-100 units/kg of body weight applied subcutaneously, with individual dosage-once or twice a week. The positive effects of our patients were achieved after the fifth week with a maximum after the twelfth week.

Purpose of the work: The purpose of this study is to verify and document the positive therapeutic effects of Epoetin in the treatment of renal anemia in patients with CKF in the third and fourth stages of the disease.

Materials and methods: The study included j-80 patients with CKF (in the third and fourth stages of the disease) of which: 35 (45%) were women and 45 (55%) were men, with an identical average age of $57,80 \pm 8,60$ years old, treated in the Clinical Hospital of Tetova. Patients according to the degree of GFR, concentrations of Er and Hb were divided into two groups. The dosage of EPO was individual, with a dose of 2000-4000 international units. Before starting the administration of EPO therapy, all patients underwent laboratory examination of: Er, Hb,Htc,Fe in serum, Thr, urea,creatinine,uric acid,electrolytes, etc.Blood for analysis was taken at 08:00 in the morning at room temperature ($19-24\ 0\ c$ the laboratory of the Clinical Hospital in Tetovo.The duration of the study was 12 months.

Statistical processing: statistical methods used arithmetic mean value and standard deviation $X \pm SD$.The comparative statistics of the hemogram were analyzed with the Mann-Whitney-U test and the “Anonova Two-Factor” statistical value for $p < 0.0001$. The results were processed with the statistical program SPSSV26.

Results: the positive effects of the therapy began to manifest after the fifth-sixth week with the achievement of hb values of 115 g/l in all patients, with the achievement of the expected effect we began to reduce (individually) the dose of EPO in 20-30 IU/kg of body weight applied subcutaneously.

Conclusion: the results of our study showed that the application of EPO represents an extremely safe and effective way for the correction and treatment of renal anemia as well as the timely prevention of its complications such as left ventricular hypertrophy,congestive heart failure, etc.In conclusion, we can suggest that the treatment of anemia in patients with dkr is known to start in the initial stages of the disease.

Keywords: Chronic Kidney Failure (CKF), anemia.

THE IMPACT OF HYPERURICEMIA ON THE PROGRESSION OF CHRONIC RENAL FAILURE

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Abstract

Introduction: Patients with Chronic Renal Failure (CKF) during the course of the disease have a high value of uric acid (AU), i.e. hyperuricemia as a result of the reduction of the glomerular filtration rate (GF-Glomerular Filtration Rate). Hyperuricemia is also a factor which affects the course and rapid progression and advancement of chronic renal diseases. The association between high values of AU and the risk of mortality in patients with CKF and cardiovascular diseases are still not well discovered, but it is assumed that the causes of hyperuricemia are: the metabolism of disordered AU, increased AU biosynthesis, malnutrition and decreased elimination of AU.

The aim of the work: the aim of the work was to verify the impact of high concentrations of AU on the progression of chronic renal diseases compared to the rate of GFR determined according to the MDRD (Modification of Diet in Renal Disease) formula.

Material and methods: our study included all 80 patients with CKF (with an identical average age of: 54,30±10.00 years), in stage III a and III b (with GFR of 30-59 mL/min/1.73m²). The examination of AU concentrations was done every quarter in the Clinical Laboratory of the Clinical Hospital of Tetova, with a duration of 5 years. The patients were randomized into two groups according to the average levels of AU: the first group of patients had values of AU < 300 µmol / l) and the second group with AU values > 420 µmol/L. Patients who manifested higher AU values and were not treated with therapy had a faster progression of renal failure and the glomerular

filtration rate was 15-29 mL/min/1.73m² with only 29-15% of normal kidney function.

Statistical processing: among the statistical methods, the arithmetic mean with the standard deviation: $X \pm SD$ was used, while the statistical significance between the examined parameters was determined with “Anonova Two-Factor” with a statistical value of $p < 0.005$. The results were processed with the appropriate state of the art statistical program SPSS V26.

Results: During the 5-year study out of 80 patients, 10 patients in the third year died as a result of cardiovascular diseases (acute myocardial infarction, cerebrovascular ictus, hypertensive crisis, etc. The average level of uric acid in these patients was: 410-450 $\mu\text{mol/L}$). The average values of AU in the serum of 25 patients were: $420 \pm 10.00 \mu\text{mol/L}$ with a decrease in the glomerular filtration rate of 17-25 mL/min/1.73m², which proves that the disease had progressed to stage IV of CKF while 45 patients had AU values of $280 \pm 12.00 \mu\text{mol/L}$ and had not passed to stage IV but were in the non-progressive phase of CKF (they were still in stage III b), compared to patients who had lower values of AU, the difference presented was with a statistically significant difference significant for $p = 0.0001$. Our study verified that the progression of the disease and the decrease in the degree of glomerular initiation is clearly dependent on the level of AU.

Conclusion: this study verified that hyperuricemia is highly positively correlated with disease progression and GFR reduction. The highest concentrations of AU were also related to the status of malnutrition, frequent infections, physical inactivity, adiposity, etc. We propose that in order to prevent the progression of CKF and the manifestations of hyperuricemia towards the cardiovascular and cerebral system, strategies on its treatment should be drawn up from the initial stages of the disease regardless of the etiology of the underlying disease.

Keywords: hyperuricemia, Chronic Kidney Failure (CKF).

THROMBOTIC COMPLICATIONS; FROM PUNCTURE TO A CLOT; RIGHT ATRIAL THROMBUS

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Abstract

In this prospective study we observed the possibility of occurrence of venous thrombus at critically ill patients in the intensive care unit due to different invasive and interventional procedures. We analyzed the clinical manifestations, values of hemostasis, doppler of upper and lower extremities and transthoracic echocardiography data of 98 patients (51 male and 47 female) in the period between 01.10. 2022 and 28.02.2023 with different health conditions. The structure of patients was heterogenous and included patients with CAD with performed PCI 42 patients (42.85%), HF-12 patients (12.2%), DVT and varicose veins 6 patients (6.12%), Valvular disease 2(2.01%), CABG 3 patients (3.06%), Dysrhythmias 24(24.48), Pericardial and Pleural effusions 9 patients or 9.18%. In the material we analyzed the occurrence of local changes at the site of puncture and the eventual thrombotic changes at distant organs and sites, the correlation between thrombotic changes and gender, age, comorbidities, hospital duration etc. From 98 subjects, more than 50% of cases developed minor venous thrombotic manifestation. We observed one case with right atrial thrombus and one case with thrombus in the right subclavian vein. The appearance of major thrombotic events is a rare but dangerous and life-threatening condition. Its prevention should be considered from the first moment of hospital admission with careful planning of measures for each patient individually.

Keywords: thrombus, thrombotic manifestation, right atrial thrombus.

ANGULAR DISTRIBUTION OF NEUTRONS FROM PROTON AND CARBON ION THERAPY USING AHUBO PHANTOM (MONTE CARLO SIMULATIONS WITH FLUKA)

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Abstract

Accelerated protons and C-ions are used by means of radiation therapy (RT) modality for cancer treatment for over 50 years. Monte Carlo simulations with FLUKA transport code were performed to simulate particle therapy with either protons or C-ions at a given radiation therapy energy range. Average Human Body (AHUBO) Phantom has been used to create a human head model (sphere of 8 cm radius). The AHUBO head was placed in (0, 0, 0) the Cartesian system of the Flair graphical interface of FLUKA, and the ion source at Z=-30 cm apart from the center. The primary beams consisted of 10⁶ protons of 100 MeV and 10⁶ C-ions with 190 MeV per nucleon, energies pertaining to a Bragg peak positioned in the center of the AHUBO head model (coinciding with the position of the pituitary). The Angular distribution with respect to the incident direction was scored with a USRBDX for angles 0-180 degrees of solid angle (step 15 degrees.). Results showed that there are two typical maxima in the neutron spectra (thermal and evaporation peaks). The intensity of both peaks changes with the change of the solid angle for both incident particle type simulations.

Keywords: Cancer, Radiation therapy, Proton therapy, C-ion therapy, neutrons, angular distribution, AHUBO phantom.

THE STATE OF DIABETES IN THE POPULATION OF THE SKOPJE REGION DURING 2020

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Abstract

Introduction: Diabetes is a chronic disease that can lead to cardiovascular disease, blindness, kidney failure, limb loss and death. It causes suffering to about 60 million people in the European region who are currently living with the disease.

Goal: The main objective of this research is to present the diabetes situation in the Skopje region for the year 2020.

Material and methods: Individual applications received electronically through the National Electronic Records System 'My Term' were used as material. The method of work is statistical-informative, a descriptive analysis was made.

Results and discussion: From the analysis of the processed data, it follows that in terms of gender distribution, a slight predominance of the female gender (by 10%) can be seen in relation to the male. The highest percentage is in the age group of 65-69 years (men-7.57%, women-10.25%). In the age group of 0-6 years there are 5 cases of registered diabetes. A total of 145 patients with type 1 diabetes were registered, or slightly more than one percent (1.02%) of the total registered diabetes for 2020 in the Skopje region.

Conclusion: A total of 14.132 diabetics were registered in the Skopje region for 2020. The most common comorbidity of registered patients with type 2 diabetes in the Skopje region for 2020 is Essential (primary) hypertension (I10) - 84.98%. The most common complications of type 2 diabetes among registered patients for 2020 in the Skopje region are peripheral circulatory complications – E11.5 (40.2%).

Keywords: diabetes, Skopje region, complications, newly discovered cases.

GYNECOMASTIA AND ABDOMINOPLASTY SURGERY AND RECOVERY WALKTHROUGH- CASE REPORT

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Abstract

Gynecomastia is a disorder of the endocrine system, with an imbalance of estrogen levels compared to testosterone levels. At least 30% of males will be affected during their life. The problem with gynecomastia appears during puberty, but in some cases it can also be inherited. One of the factors can be the abuse of alcohol, which can lead to problems with the liver, where it changes the way the body metabolizes hormones. Another factor is the abuse of steroids, where the use of steroids can cause hormonal imbalance and even gynecomastia. In the case of some anabolic steroids, such as Oxymetholone and Metandienone, the drug is converted to estrogen inside the body and this causes excessive breast growth. Aesthetic surgical treatment gives very good results for the patient, which is considered as the last solution to reduce the shape and contour of the male chest, where the patient is allowed to regain self-esteem and a masculine appearance by overcoming stress and anxiety. After reducing the size of the breast with a subcutaneous mastectomy with liposuction or using both techniques, intervention is often necessary to remove excess skin that cannot be reduced spontaneously. Abdominoplasty, commonly known as a “tummy tuck” is performed to correct soft tissue abnormalities of the anterior

trunk, from the lower rib cage to the inguinal and pubic areas. Superior aesthetic results can be achieved in many patients with liposuction combined with abdominoplasty, where small fat deposits that cannot be treated with abdominoplasty are treated with liposuction. A 24-year-old male patient presented with gynecomastia and abdominoplasty, where surgical intervention was performed for gynecomastia and abdominoplasty. The patient recovered well and with excellent results of the intervention.

Keywords: Androgen, Estrogen, Surgery, Liposuction, Drug.

PARKINSON'S DISEASE – THE SILENT NEURODEGENERATIVE DISEASE

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Abstract

Parkinson's disease is a brain disorder that causes unintended or uncontrollable movements, such as shaking, stiffness, and difficulty with balance and coordination.

Symptoms usually begin gradually and worsen over time. As the disease progresses, people may have difficulty walking and talking. They may also have mental and behavioral changes, sleep problems, depression, memory difficulties, and fatigue.

While virtually anyone could be at risk for developing Parkinson's, some research studies suggest this disease affects more men than women. It's unclear why, but studies are underway to understand factors that may increase a person's risk. One clear risk is age: Although most people with Parkinson's first develop the disease after age 60, about 5% to 10% experience onset before the age of 50. Early-onset forms of Parkinson's are often, but not always, inherited, and some forms have been linked to specific alterations in genes.

The main indications of Parkinson's Disease are: tremor in hands, arms, legs, jaw or head, muscle stiffness, where muscle remains contracted for a long time, slowness of movement, impaired balance and coordination, sometimes leading to falls.

There are currently no blood or laboratory tests to diagnose non-genetic cases of Parkinson's. Doctors usually diagnose the disease by taking a person's medical history and performing a neurological examination. If symptoms improve after starting to take medication, it's another indicator that the person has Parkinson's.

Although there is no cure for Parkinson's disease, medicines, surgical treatment, and other therapies can often relieve some symptoms. Medicines can help treat the symptoms of Parkinson's by: increasing the level of dopamine in the brain, having an effect on other brain chemicals, such as neurotransmitters, which transfer information between brain cells, helping control non- movement symptoms. The main therapy for Parkinson's is levodopa, carbidopa, dopamine agonists, enzyme inhibitors, amantadine, anticholinergic drugs. For people with Parkinson's disease who do not respond well to medications, the doctor may recommend deep brain stimulation.

Conclusion: Parkinson's Disease is a neurological progressive disease which requires prompt and qualitative treatment in order to not worsen the symptoms.

Keywords: Parkinson's Disease, Clinical, Neurodegenerative, Tremor, Impaired, Dopamine.

TREATMENT OF LYMPHATIC MALFORMATIONS IN CHILDREN: 3 YEARS EXPERIENCE

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Abstract

Introduction: Lymphatic malformations (LM) are congenital benign malformations from the group of slow-flow vascular anomalies consisting of pathological cystic dilatation of the lymphatic vessels.

The incidence of LM ranges from 1.5 to 2.8% in 2000 to 4000 newborn children, and are relatively rare congenital vascular anomalies. They are characterized with equal representation between the genders. From the structural aspect, LM are divided into macrocystic, microcystic and mixed type, with its own therapeutic and prognostic implications.

A small percentage of LM are combined with additional anomalies and are part of syndromes such as CLOVES, Klippel-Trenaunay, Proteus and others. In recent years, the method of choice in the treatments is sclerosing as a non-invasive method achieving almost excellent results.

Material and Methods: Eighteen children from 0 to 14 years of age were included in this study, in the period from 2019 until 2022 at the Clinic for Pediatric Surgery. The diagnosis was made with ultrasonography and magnetic resonance. Additional laboratory tests

were made, while additional diagnostic methods were not necessary. Informed parent/guardian consent was provided for all children.

Results: Out of the total of 18 children, the sclerosing method was used in 15 children, one child was treated with surgery combined with sclerotherapy, one child was observed due to malformation smaller than 2 cm, and in one child we have noted spontaneous regression of the lesion. The children did not have functional difficulties. Three children with macrocystic type were treated with one sclerotherapy session each, whereby regression achieved over 90% of the change, which is considered to be an excellent outcome. The other 12 children were treated with 3 to 4 sclerotherapy sessions over a period of 3 to 4 months, achieving a 50–90% regression of the lesion (good outcome). The patient who underwent a surgery combined with sclerosing technique was diagnosed with a so-called fibro-adipose vascular anomaly. After the sclerotherapy, we had complications in one child - a skin rash, that ended after a symptomatic treatment and outpatient treatment. The hospitalization of the children lasted an average of two days.

Conclusion: Sclerotherapy as a minimally invasive method is the golden choice for the treatment of lymphatic malformations, which achieves satisfactory to excellent results, has short hospitalization period, short-term anesthesia without intubation is used, has minimal side effects and a quick return to the everyday activities.

Keywords: lymphatic malformations, minimally invasive method, sclerotherapy, sclerosing agent, pediatric population.

IMPACT OF DYSLIPIDEMIA AND ARTERIAL HYPERTENSION IN THE PROGRESS OF CHRONIC KIDNEY FAILURE (CKF)

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Abstract

Introduction:

Uremic dyslipidemia, diabetes and arterial hypertension remain as the most frequent factors in the progression of chronic renal failure (CKD) and apparently contribute to the appearance of many cardiovascular diseases with extremely high mortality in these patients. Lipid disorders and arterial hypertension (together) cause glomerular and tubulointerstitial damage with very rapid progress and progress in the progression of renal disease. Lipid metabolism disorders in patients with CKD were first described in 1827 by Dr. Dr. Bright. Older patients with chronic kidney disease (CKD) are at greater risk for cardiovascular disease compared to the healthy population. Patients with CKD have dysregulation of lipid metabolism in the initial stages of the disease with increased concentrations of triglycerides (TG), and LDL-ch (low-density lipoprotein cholesterol), while with a reduction in HDL-ch (High Density Lipoprotein cholesterol) and these disorders are manifested with high atherogenic effects with consequences for the cardiovascular system with cardiovascular mortality more than 10 times compared to the general population. According to K/DOQI

guidelines, it is recommended that patients with DKR have a systolic pressure of <130 mmHg and a diastolic pressure of ≤ 90 mmHg.

Purpose of the work:

The purpose of the work was to verify the impact of arterial hypertension and lipid disorders on the progression of the disease as well as measures on the prevention, slowing down and management of HTA and uremic dyslipidemia in patients with CKF.

Material and methods:

On cross-section study a total of N=80 patients were included (from whom 45 were males with mean age of $57,00 \pm 12,00$ and 35 females with mean age of $55,00 \pm 14,00$), patients with arterial hypertension and CKD treated with ACE inhibitors in Clinic Hospital of Tetova-Department of Internal Medicine in Tetova. This study included N=60 healthy individuals as a control group (35 males and 25 females with identical mean age of $54,00 \pm 10,80$). In patients and control group we performed examination of proteinuria, serum urea, serum creatinine, uric acid, electrolytes, lipid profile for total lipids (TL), total cholesterol (ChT), Triglycerides (TG), HDL- ch, LDL- ch in order to verify their impact on the role of arterial hypertension as risk factor on the onset of CKF.

Results:

From the results obtained from patients with CKF of III a and IIIb with three measurements every three months, the concentrations of TG are shown with very high values of 3.60 ± 0.80 mmol/l, as well as LDL- ch with 4.30 ± 0.70 mmol/l, ChT= 5.90 ± 1.60 mmol/l, while HDL- ch (proatherogenic) concentrations were very low= 1.03 ± 0.40 mmol/l, while the values obtained from the control group were as follows: TG= 1.23 ± 0.4 mmol/l, ChT= 4.70 ± 0.30 mmol/l, LDL- ch= 3.10 ± 0.50 HDL- ch= 1.30 ± 0.40 mmol/l, mmol/l

and the difference between the values obtained by patients with CKF versus healthy individuals was for $p=0.0001$.

Conclusion:

In conclusion, we can verify that dyslipidemia and arterial hypertension still remain as the most common manifestation in patients with CKF and the rapid progression of the disease is obviously dependent on dyslipidemia and hypertension. Treatment of arterial hypertension in the early stages and uremic dyslipidemia should be the main goal of their management.

Keywords: lipid profile, Chronic Kidney Failure(CKF), arterial hypertension (AHT).

MODERN PROTOCOLS IN THE TREATMENT OF POLYTRAUMATIZED PATIENTS

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Abstract

The purpose of this article is to present the need as well as the advantages of contemporary protocols such as DCO (Damage Control Orthopedics) in the treatment of patients with severe fractures as well as polytraumatized in terms of minimal traumatological treatment in the first act as life-saving surgery where then the team of resuscitators will be involved for preparation, resuscitation and intensive treatment so that later a surgical intervention will be performed for definitive treatment of the injury caused in the initial attack or trauma. DCO, along with other contemporary protocols, is a principle that is universally approved by medical teams that treat and cure patients of this nature, and the results presented show that the mortality rate drops by 3 to 4 times, as well as possible complications. Are reduced as much as ARDS (Acute respiratory distress syndrome), MOF (Multiple organ failure), coagulopathy, embolism, etc.

In conclusion, it can be stated that the use of modern protocols and DCO provides good comfort for both the patient and the medical team involved in the treatment of the injured.

Keywords: Contemporary traumatological protocols, DCO (Damage Control Orthopedics), ARDS (Acute respiratory distress syndrome), MOF (Multiple organ failure), coagulopathy.

SKIN MANIFESTATIONS IN PATIENTS WITH UREMIC SYNDROME

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Abstract

End-stage Chronic Renal Failure (ESRD) represents a gradual irreversible loss of all renal functions (excretory, secretory and metabolic) of the kidneys. Among the chronic manifestations of patients with ESRD and those treated with chronic intermittent hemodialysis (HD) is uremic itching or uremic pruritus. Uremic pruritus has a multifactorial etiology and is still well unknown. Uremic pruritus in patients with chronic renal failure begins to manifest itself in stage IIIa and IIIb according to Glomerular Filtration Rate (GFR) (and those treated with HD) and is present in about 40-85% of them with varying severity you are. Pruritus ermica begins to manifest with redness and itching of the face (more often at night), chest, back and limbs with dry skin with excoriations, papules, ulcers, depression, etc. It is hypothesized that the interaction between non-myelinated C fibers and the dermal cell mass plays an important role in stimulating pruritus, thereby metabolic disorders of calcium, magnesium, aluminum sodium, phosphate in the serum, parathyroid gland, immune system dysfunction, inflammation, growth of pro-inflammatory factors (IL-interleukin-13,IL-31),the proliferation of nonhista-minergic neurons (which are involved in the neural pathways that produce storage that does not respond to

antihistamines, malnutrition, suboptimal dialysis regimen, bioincompatible membranes, C reactive protein, etc. The prevalence of pruritus in patients with chronic kidney disease treated with HD has decreased in recent years with the use of more sophisticated dialysis modalities and trocopherol dialysis membranes.

The purpose of the work: was to identify the prevalence and skin manifestations of patients with ESRD treated with chronic intermittent HD.

Materials and methods: the study included 120 patients with ESRD, of which 66 (55%) were men with an average age of 58.50 ± 12.00 years, while 54 (45%) were women with an average age of 58.50 ± 12.00 years old treated over 36 months with chronic HD.

Results: from 55 women manifestations of uremic uritis were manifested in 22 (41.0%) and 38 (47.0%) men. Among the skin symptoms, dry skin with excoriations mainly dominated.

Conclusion: at the end of our work we can prefer that the dialysis regime, the observance of HD sessions, the accumulation of excess fluids, metabolic disorders of phosphoric, calcium, parathyroid substances, parathyroid hormone, incompatible membranes have a significant effect on the appearance of pruritus uremica, therefore we propose that the HD sessions be of longer duration, and that bicompatible membranes with tocopherol be used, as well as more adequate equilibration of phosphorus and calcium metabolism.

Keywords: End Stage Cronic Renal failure, pruritus uremica.

ANTI-COVID-19 VACCINE - AN HISTORICAL ACHIEVEMENT, ITS SUCCESS AND EXPECTATIONS

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Abstract

Every vaccine aims at developing immunity against a certain infection. Normally a vaccine needs several years for its development. Until 31 st of December 2019 the time of development for a vaccine was between 4 and 20 years. Experience in working for a vaccine against SARS-Cov 1, MERS and cancer immunotherapy, made it possible in less than 10 months to have available 10 different vaccines anti Covid – 19 and more than 60 others on the way. The Pfizer/BioNTech vaccine was the first to be prepared and approved for public use. It was produced using a new technology never used before in vaccine preparation. The vaccine stimulates our immunity introducing the mRNA for the Spike viral protein. The protein is synthesized in our cells, presented to lymphocytes and triggers antibody production as if the virus itself was introduced into our system. The vaccine resulted to be 95% effective and pretty safe according to the monitoring bodies, opening the way for emergency use in the population. The race to produce the first vaccine wasn't only a public health concern, but also a matter of geopolitical rivalry.

The head of the WHO Tedria Adhanom Ghebreyesus in his closing speech at the international assembly said that the vaccine would be the most important means in controlling the pandemic and that the results of the first trials were promising. He also said that this was the

first time in history that a vaccine was produced in such a short time. Von der Leyen and Charles Michel, president of the European Council, emphasized the fact that the member countries have a total agreement in using their instruments to provide low-income countries with the vaccine. This would be made possible through the COVAX network where Albania was also a member. The Vaccination Comity of each country, including our own with an extensive experience in vaccination campaigns, would control each phase of the process like planning, administration and the completion of the vaccination process in Albania.

Keywords: vaccination, Covid – 19, mARN.

APPEARANCE, THERAPY AND OUTCOME OF ISCHEMIC CEREBRAL VASCULAR INCIDENT AT THE CLINICAL HOSPITAL TETOVO DURING JANUARY 2022 - JANUARY 2023

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Abstract

Background: Republic of North Macedonia faced with the demographic, economic and social transition for more than two decades. At the crossroads of this transition it is also the population of Tetovo with its surroundings. The neurology department in Clinical Hospital Tetovo faces challenges to provide adequate care to stroke patients.

The aim: To determine the number and distribution of stroke patients, to evaluate the treatment and outcomes and to determine with whom the patients in the period of January 2022 - January 2023 were relieve from this neurology department.

Methods: The present study was a descriptive as well as a comparative study. Target parameters were collected from medical documentation that was generated during patient treatment.

Results: For the specified period, a total of 286 patients, 152 males and 134 women were hospitalized. The most frequent neurological diseases were acute strokes (71.68%), TIA (3.49%) and other cerebrovascular diseases (4.89%), while 38 (18.54%) patients died, and 13 (6.34%) patients were taken home in serious health condition. Acute ischemic stroke (AIS) was the first most common cause of stroke, account for 81.95% of hospital admission for stroke, while

acute hemorrhagic stroke (AHS) was the second most common cause of stroke, account for 18.05%. According to estimates, only two thrombolysis procedures were performed due to meeting the criteria for thrombolysis.

Conclusion: AIS in hospitalized patients is more likely to occur in elderly patients with cardiovascular comorbidities. Aging, comorbidities and acute stroke on admission along with impaired level of consciousness contribute to the fatal outcome.

Keywords: stroke, ischemic, hemorrhagic, treatment, outcomes.

THE ROLE OF THE NURSE ON PATIENT CARE IN THE POST-OPERATIVE PERIOD

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Abstract

The post-operative period is particularly important in surgical patients, because of the various complications that may arise as a result of the surgical intervention and anesthesia.

Aim of the study: To present the great importance of the nurses in the continuous monitoring of patients in the early postoperative period.

Material and methods: this study includes patients who were operated on due to various surgical pathology, in the general surgery clinic at the Tetovo Clinical Hospital during the last year.

Results: all patients operated on immediately after their transfer to the room were continuously followed by the nurses engaged in the ward. The monitoring of vital signs, the intensity of pain, as well as the regular control of the operative wound and drains were in the center of attention of nurses. For any disorder of vital functions, or any abnormal manifestation in the patient's wound or drains, the nurses immediately inform the surgeon, and take the appropriate actions according to the doctor's instructions. At the same time, the nurses help and encourage the patients to move as fast as possible, this action helps the patients to return to normality soon after the surgical intervention. Early activation of patients after surgery has its own advantages not only in minimizing postoperative complications

but also helps in early return of patients to work and their daily activities.

Conclusion: the post-operative period is quite critical and requires constant monitoring of patients in order to detect any complications, as well as their immediate treatment. In this period, the role of nurses is very important and irreplaceable.

Keywords: postoperative, complication, nurse.

THE INCIDENCE, RISK FACTORS AND PERINATAL OUTCOMES OF FETAL MACROSOMIA IN NON-DIABETIC MOTHERS: A CASE-CONTROL STUDY

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Abstract

Introduction: Fetal macrosomia is defined as a birth weight >4000 g and is associated with several maternal and fetal complications such as maternal birth canal trauma, shoulder dystocia, neonatal hypoglycemia, and perinatal asphyxia. Material and methods: This is a case-control study conducted in the maternity unit of the Clinical Hospital in Tetovo, to determine the frequency, associated risk factors, and short-term fetal and perinatal outcomes in non-diabetic pregnant women with fetal macrosomia. The women after delivery were divided into two groups according to their fetal birth weight: group I (≥ 4000 grams or more) and group II (from 2500 to 3999 grams). Maternal socio-demographic characteristics, obstetrical factors, and maternal and perinatal outcomes were studied and compared in the two groups. Differences were considered significant if $p < 0,05$.

Results: During the study period there were a total of 3302 deliveries of which 251 had a weight greater than or equal to 4000 g. The prevalence of fetal macrosomia was 7.60 %. Multivariate logistic regression analysis showed that: multiparity, women's age, gestational weight gain, gestational age, neonatal sex, and previous history of fetal macrosomia were significantly associated with fetal

macrosomia. Macrosomic infants were more likely to have shoulder dystocia, birth asphyxia, hypoglycemia, respiratory distress, and perinatal trauma compared to controls. Maternal complications such as prolonged labor, Caesarean section, postpartum hemorrhage, and perineal tears occurred more frequently in the macrosomia group compared to controls (p-value <0.05).

Conclusion: Early identification of risk factors could allow preventive measures to be taken to avoid adverse perinatal outcomes.

Keywords: fetal macrosomia, maternal injury, birth trauma.

PREVALENCE AND SEVERITY OF MENOPAUSE SYMPTOMS AMONG MIDDLE-AGED WOMEN AGED 45-60 YEARS

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Abstract

Background: Perimenopause is a transitional period in the life of women, which is characterized by a lack of sex hormones, which lead to menstrual irregularities and vasomotor changes that can contribute to appearance of physical and emotional symptoms.

Objective: To explore and describe menopausal experiences, the prevalence and severity of menopausal complaints and symptoms among middle-aged women attending secondary health care center.

Methods: A cross-sectional hospital based study conducted at the Gynecology department in Clinical Hospital in Tetovo, between January and March 2023. A sample of 112 women aged 45-60 completed a self-administered questionnaire that included the socio-demographic, medical and obstetrical history form and Green Climacteric Scale questionnaire. The women inclusion criteria were approaching menopause, having irregular menstruation, having no surgical or medical caused menopause, and who were not under treatment for menopausal symptoms.

Results: During the study period 112 women were surveyed. The prevalence of muscle and joint problems was (72%), hot flushes (62.8%), insomnia (54.4%), sexual problems (52.6%), and urological disturbances (49.5%). All symptoms were associated with menstrual

status. In general, in premenopausal women significantly presented lower rates of menopausal symptoms when compared to peri- and postmenopausal women.

Conclusion: The symptoms are almost same to those experienced by middle-aged women in other similar studies, but at different frequencies.

Keywords: Menopausal symptoms; Questionnaire survey; Middle-aged women.

GIANT ECHINOCOCCUS GRANULOSUS HYDATID CYSTS: A CASE REPORT PRESENTATION

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Abstract

I report here a case of a 29- year old woman who was admitted to the hospital with yellow skin and eyeballs, pain in the right upper quadrant and epigastric region, nausea and weight loss. An asymmetrical right upper quadrant enlargement was detected on physical examination. Laboratory tests showed the presence of antibodies against Echinococcus granulosus. Ultrasonography and computerized tomography revealed giant hydatid cyst medially to the liver, measuring 14x17cm in diameter; large hydatid cyst laterally to the liver, measuring 10x10cm in diameter and large hydatid cyst central to the liver, measuring 10x10cm in diameter. A cystectomy was performed. The postoperative period was uneventful and the patient was discharged on the 5th postoperative day.

Keywords: Echinococcosis, Hydatid cyst, Surgery, Residual cavity.

QUANTITATIVE STRESS ECHOCARDIOGRAPHY IN DIAGNOSIS OF THE CORONARY ARTERY DISEASE(CAD)

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Abstract

The aim of this study: is to present the results obtained from stress echocardiography, for diagnosing coronary disease. For objective quantification of global and regional function of LV, was used speckle tracking technology (SEH), which offers the possibility for quantitative determination of the function of the left ventricle (LV) and its segments. SEH participates in the group of cardiac imaging methods and enables the visualization of changes in global and regional function of LV and its segments, used for objectifying ECG changes of patient's symptoms with greater accuracy and specificity than stress ECG.

Materials and methods: 20 people were analyzed without coronary artery disease compared to 20 persons with signs of CAD, ST changes during stress EKG(SEKG). Both groups of patients had a normal echocardiography done before the SEH.

The load of the patients in the study was done with a treadmill, using the Bruce protocol(SECG).

Echocardiographic images were obtained with ultrasound (Philips Epiq Elite ver.7.0.3), with the biphasic method, in rest(Rest) and post-exercise(PEX)imaging. The visualization of LV was done in

4C,2C,3C from the apex, and LAX and SAX from parasternal axis , in both phases of SEH.

The obtained images were analyzed onsite in Epiq Elite with aCMQ stress software, dedicated for SEH. Images also where analysed and Offsite ,with the software for SEH of Tomtec.gmbh , Image Arena ver 4.7,Image.com3(SEH dedicated part) and Color Peformance analysis(CPA)(speckle tracking software for analysing of LV,LA and RV function) .

Results: In table 1 , are presented the results of the group of patients without disease where is registered increase of EF of LV(EF from 64,66% in rest to 68,83% in PEX).

Also there were no changes in the regional function of LV Radial strain(RS) of LV from 22,79% in rest to 28,64% in PEX, and Longitudinal Strain(LS) of LV from 16,6% in rest to 20,32% in PEX.

Unlike this group, in the group of patients with changes in SEKG(table 2) ,in SEH were presented significant changes in regional and global function of LV. EF of LV decrease from 55,6% in rest to 50.25% in PEX, RS from 22.8% in rest to 19,1% in PEX ,and LS of LV from -18.05% in rest to -15.8% in PEX.

Table 1 Group without changes of ST SECG and SEH

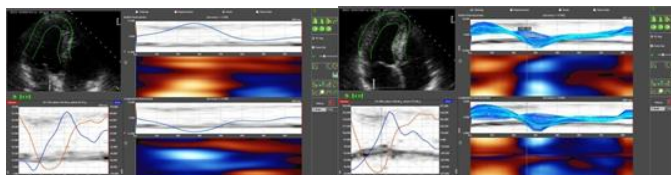
rest	EF %	RS (-%)	PSS	LS(-%)
b.o	67	22,79	23	16,6
PEX	68,83	28,64	24	20,32

Table 2 Group with changes IN ST segment in SECG and CAD symptoms

	EF %	RS (-%)	PSS	LS(-%)
rest	55.6	22,8	25	18,05
PEX	50.2547	19,1	37	15.8

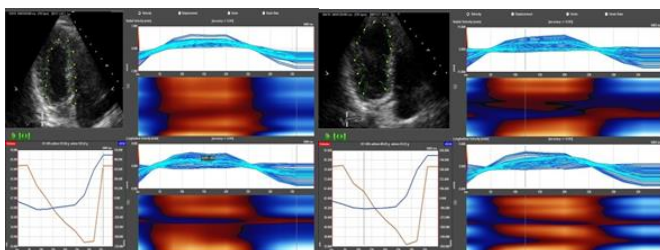
Rest b.o (fg1)

Post exercise b.o(fg2)



Rest foto 5(b.o)

Post exercise patollogjike foto 6



Conclusion:

1. In SEH without cardiac disease there is increase of all the sistolic parameters of LV.

2. In SEH with cardiac disease there is a decrease of all parameters of LV.
3. There are registered hypokinetic zones that are equivalent with the vascularization of the altered coronary artery.
4. Of a big importance is the PST phenomenon, as the first sign in the majority of patients with coronary disease in the impost phase.

Keywords: Stress echocardiography(SEH), regional wall motion abnormalities of left ventricle, ST segment abnormalities, Stress ECG(SECG), Coronary artery disease, Tomtec 2D CPA.

SOME EPIDEMIOLOGICAL CHARACTERISTICS OF BRAIN TUMORS IN KOSOVO

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Abstract

Introduction: Brain tumors are a significant public health concern, causing substantial morbidity and mortality worldwide. The incidence of brain tumors varies globally, with an increasing trend observed in recent years in Kosova. This study investigates some epidemiological characteristics and incidence of brain tumors in Kosova, including their types, anatomical localization, and demographic distribution.

Methods: A total of 227 patients with brain tumors were included in this study, diagnosed and confirmed by Magnetic Resonance and histopathological examination at the University Clinical Center of Kosova in the period 2019-2021. Statistical analyses were conducted using SPSS software, and the significance level was set at $P < 0.05$.

Results: The study found an increasing trend in the incidence of brain tumors in Kosova, with the highest rate recorded in 2021 at 4.7 cases per 100,000 inhabitants. Malignant tumors accounted for 66.1% of cases, and meningioma and glioblastoma were the most frequent Brain tumors in Kosova adults. The study also found that brain tumors had a higher incidence in males and a peak in the age group

of 55-59 years. Most often, tumors had supratentorial/intra-axial localization (63.4%).

Conclusion: This study highlights the significant burden of brain tumors in Kosova and the need for further research and resources to strengthen the evidence base and advance the prevention and treatment of brain tumors. Central cancer registries and proper data collection and reporting are crucial for monitoring some epidemiological characteristics and trends of brain tumors in Kosova. Early detection of brain tumors should be prioritized as a potential public health intervention.

Keywords: Epidemiology, Incidence, Brain Tumors, University Clinical Center of Kosova, Kosova.

THE IMPORTANCE OF MRI IN THE DIAGNOSIS OF A RARE CASE OF BRAIN TUMOR: ANAPLASTIC PLEOMORPHIC XANTHOASTROCYTOMA

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Abstract

This case report describes the diagnosis, treatment, and outcome of a 15-year-old male patient with anaplastic pleomorphic xanthoastrocytoma (APXA) in the left temporal region. The patient was diagnosed with APXA through MRI imaging and a biopsy of the tumor tissue underwent surgery, and achieved complete tumor removal.

The aim of this case report is to provide detailed information regarding the imaging diagnosis, which is complicated as it requires differential diagnosis with pilocytic astrocytoma and histopathological verification after tumor removal, as well as the treatment and outcome of a patient with APXA, a rare and aggressive type of brain tumor.

Methods: The patient underwent a combination of imaging studies such as magnetic resonance imaging (MRI) and a biopsy of the tumor tissue, as well as surgery and combined radio-chemotherapy. The patient will be closely monitored for possible tumor recurrence.

Conclusions: APXA is a rare and aggressive type of brain tumor that requires a multidisciplinary approach for diagnosis and treatment. Further research is needed to improve our understanding of APXA and to develop more effective treatment options for this type of tumor. Close monitoring and further treatment options should be considered for patients with APXA.

Keywords: anaplastic pleomorphic xanthoastrocytoma, brain tumor, MRI, Radiology Clinic, University Clinical Center of Kosova, Pristina.

THE ROLE OF IMAGING MODALITIES IN THE EVALUATION OF SUPERIOR MESENTERIC VEIN THROMBOSIS

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Abstract

Superior mesenteric vein thrombosis is an abdominal emergency that is rarely diagnosed early, with a high mortality rate, which is estimated to occur in 5-15% of patients with acute mesenteric ischemia.

Male patient, 42 years old, presented to the UHC "Mother Teresa" with a prolonged febrile condition of 21 days, for determination (temperature up to 41 ° C).

In chest-abdominal CT performed with I.V. contrast agent results: presence of thrombus in the left branch of the SMV with the presence of air bubbles inside as well as aneurysmal expansion in the distal segment is evident. An encapsulated collection is observed in the periphery, which suggests a post hematoma thrombus. After consultations with surgeons, gastroenterologist and vascular surgeons, antibiotic and anticoagulant therapy was recommended. In the follow-up CT after 3 months, complete reabsorption of the thrombus was noticed.

Conclusion: Computed tomography identifies approximately 90% of cases of MVT, which is more common in men aged 40 to 60 years. Despite the high mortality of mesenteric vein thrombosis, diagnosis in early stages, therapy with anticoagulants and in some cases surgery have made it possible to reduce this mortality rate.

Keywords: CT, thrombosis, mesenteric vein, anticoagulants.

RISK FACTORS AND PREVALENCE OF OBSTRUCTIVE CORONARY ARTERY DISEASE IN PATIENTS UNDERGOING ELECTIVE CORONARY ANGIOGRAPHY IN CLINICAL HOSPITAL IN TETOVO

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Abstract

Objectives: We aimed to determine the prevalence of angiographically significant coronary disease and associated risk factors in suspected patients referred for coronary angiography(CA).

Methods: We retrospectively studied 100 consecutive patients who underwent CA for diagnostic purpose for coronary disease at the Clinical Hospital in Tetovo in the period from December 2022 to February 2023. Coronary disease as a narrowing of the artery with stenosis of 50% or more in any coronary vessel was considered to be angiographically significant. Classical risk factors, were compared between the group with and without significant stenosis.

Results: Of the risk factors the most prevalent was hypertension with 70%, then smoking 60% and diabetes 45%. Obstructive coronary artery disease (CAD) was seen in 49% of the patients. Participants with OCD, compared to patients without OCD, were older (age 58.34 vs. 42.97, $p=0.002$), there were more men (60.3% vs. 33.3%, $p=0.008$), more likely to be smokers (58.3% vs. 41.7%, $p=0.022$), to have diabetes (66.7% vs. 33.3%, $p=0.001$), to have higher mean HbA1c values (7.11 vs. 6.43, $p=0.048$) and have lower HDL values

(1.13 compared to 1.39, $p=0.00$). In logistic-regression analysis, presence of diabetes (OR: 0.242; CI: 0.075-0.785, $p=0.018$), the older age (OR: 1.13; 95% CI: 1.047 - 1.2220, $p=0.002$), and low values of HDL (OR: 0.087; 95% CI: 0.013-0.564, $p=0.010$) were significant independent predictors of obstructive CAD.

Conclusion: In our study, 49% of patients who underwent CA had obstructive CAD. In addition to age and gender, diabetes and smoking were the most important factors associated with the appearance of significant CAD in CA. The approach for wider application of preliminary non-invasive tests can contribute to the optimization of CA, while the intervention of the public health sector can contribute to the reduction of smoking as well as the reduction of the prevalence of diabetes mellitus.

Keywords: Obstructive coronary artery disease, Risk factors, Coronary angiography.

CHALLENGES AND VISIONS OF THE PHYSIOTHERAPIST PROFESSION IN ALBANIA

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Abstract

Aims: The purpose of this study is to highlight the problems that physiotherapists in Albania face during their daily working and to promote the role of these professionals in patient management emphasizing their visions in the further evolution of this field.

Methodology: This cross-sectional study was realized through self-administered questionnaires, according to the latest studies, published by PubMed, Google Scholar, Scopus and Physiotherapy Databases Evidences with keywords: physiotherapy, profession, science; as well as American Journal of Physical Therapy recommendations. The questionnaire consisted on 3 sessions. First session included general data, second session addressed problems faced in daily working and third session the visions for the future of this profession in our country. The statistical analysis was performed via SPSS system.

Results: In the study participated 84 physiotherapists, with a predominant age of 30, where 65.9% of them work in a private institution. The main difficulties that physiotherapists face in daily work are few referrals from doctors (39%) and the lack of standardized protocols (34.1%). The challenges of this profession in Albania are lack of support structures (44%) and pay level (25.6%). The greatest interest in the field of physiotherapy in our country is the identification and promotion of the figure of physiotherapist, professional autonomy, new therapeutic modalities and ongoing

education and training.

Conclusions: Creating support structures that represent common interests of physiotherapists the increasing of cooperation between doctors and physiotherapists; the increasing of professional autonomy level; as well as offering education and frequent trainings based on standardized protocols and latest scientific researches.

Keywords: physiotherapy, professional, challenges, future.

RETINOPATHY OF PREMATURITY IN PREMATURE INFANTS GESTATIONAL AGE MORE THAN 30 WEEKS AND BIRTH WEIGHT OVER 1500 GRAMS - 10 YEAR RESULTS

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Abstract

Purpose: The purpose of this paper is to analyze the possibility of developing ROP and need for treatment in premature babies born between 30 and 36 weeks of a gestational age and birth weight over 1500 g.

Method: In this retrospective study were analyzed data of premature babies which followed in period from 2010-2020. In Republic of Macedonia for screening of ROP is used recommendations from the American Association for Pediatric Ophthalmology and Strabismus where clearly defined inclusion for the screening program for ROP of all premature with a birth weight (BW) of 1500 g or less and / or born at 30 gestational weeks (GW) or earlier and selected infants with a birth weight between 1500 to 2000 g with unstable clinical course.

Results: In this retrospective study were included 314 premature babies treated with laser photocoagulation in the period from 2010-2020 performed by one eye surgeon. 104 treated neonates are with gestational age more than 30 gestational weeks (33.12%) and 64 infants are with BW over 1500 gr (20.38%).

Conclusions: The results concluded that premature infants with unstable clinical course, born between 31 and 36 weeks of a gestational age and birth weight over 1500 g should be screened for ROP.

Keywords: screening for ROP, birth weight (BW), gestational age (GA), laser photocoagulation (LPC).

ACUTE RESPIRATORY INFECTIONS: CONTEMPORARY TREATMENT AND NURSING CARE

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Abstract

Acute respiratory diseases or infections in childhood are the most frequent diseases that are presented for medical care.

The most frequent causes are of viral origin followed by bacterial infection, while air pollution is an aggravating factor.

Over 70% of all cases presented in our department belong to respiratory infections.

In the clinical overview, coughing, subfebrile temperature, sneezing dominate as the initial symptoms, and later with the development of the disease, broncho-obstructions, bronchopneumonias and pneumonias are often accompanied by enterocolitis.

The purpose of the paper: To determine the importance of the initial team treatment as well as the prescription of adequate therapy to prevent possible complications, fast and adequate treatment.

Material and results: In this paper, 143 children aged 0-14 years who were hospitalized in the pediatric ward in Tetovo with an average age of 6.8 years, in the period 2020-2022, were analyzed. We divided the patients into 4 groups according to age.

All the children were coughing, sneezing, and average temperature of 38.1 degrees Celsius and were very worried.

For diagnosis, we used: clinical control, biochemistry laboratory with differential blood count and CRP, sedimentation according to indications and X-ray of the lungs.

The therapy was initially started with symptomatic therapy, local oral antiseptic, vitamins, consumption of fluids and where the medical nurse actively participates, inhalations with physiological solution and corticosteroids, use of physical therapy and inhalation pumps with bronchodilators, while in complicated cases with bacterial infection Antibiotics were also added to the therapy, taking into account the child's age, weight, eventual accompanying disease and clinical picture.

With the prescription of adequate therapy for the children, with adequate treatment, their treatment was successfully done by not abusing antibiotics and using them rationally.

Conclusion: Infections of the respiratory system require a serious and team approach of the doctor and medical nurse, the accurate and timely assessment of the cause of the infection, enables adequate treatment and the avoidance of excessive use of antibiotics and the preservation of the child's immunological system and the results and our experiences are consistent with international experiences and contemporary protocols for the treatment of pediatric acute respiratory diseases.

Keywords: Respiratory system infections, biochemical laboratory, nurse.

THE IMPACT OF IONIZED WATER COMBINED WITH ADDITIONAL NON-ENZYMATIC ANTIOXIDANTS ON THE CONCENTRATION OF CREATININE IN RATS' SERUM DURING HYPERTHERMIC STRESS

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Abstract

One of the most important factors that could promote the production of reactive oxygen species (ROS) is hyperthermic stress. The cellular redox state has been found to be negatively impacted by elevated levels of reactive oxygen species (ROS). Ionized water or Electrolyzed Reduced Water (ERW) has been proven in numerous studies to have the ability to scavenge free radicals that are formed by hydrogen molecules with a substantial reducing capacity and may be involved in the regulation of cellular redox. The goal of our study was to see the impact of ionized water on the concentration of creatinine in rats' serum during hyperthermic stress by adding other non-enzymatic antioxidants, glutathione, and vitamin C. White Wistar laboratory rats, female, weighing 180–220 g, young rats, separated into three groups of 15, were used for the experiment. Oxidative stress was induced by acute hyperthermic exposure to 41 °C. The first group was a control group (CPM) treated with natural water, the second group was treated with ionized water (TAM), and the third group was treated with ionized water with added glutathione and vitamin C (TAD). The duration of treatment lasted 21 days. Acute heat stress, except that it results in oxidative stress, conditions accelerated catabolic reactions in the body. The higher concentration of urea and creatinine in the period of hyperthermic exposure is due to the

intensified breakdown of proteins. In such conditions, urea and creatinine concentrations do not represent a consequence of the applied treatment.

Keywords: Ionized water, hyperthermic stress, glutathione, vitamin C, creatinine.

META-ANALYSE OF ARTICLES, YOUNGSTERS CIGARETTE USAGE IN TETOVA, NORTH MACEDONIA

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Abstract

Introduction: This article discusses the issue of cigarette usage among youngsters in North Macedonia. A study by the World Health Organization (WHO) found that around 30% of young people aged 13-15 have smoked at least once in their lifetime, with higher prevalence among boys than girls. Peer pressure and the portrayal of smoking as glamorous in the media are cited as contributing factors, as well as the easy availability of cigarettes in shops and supermarkets. Smoking is a leading cause of premature death and disease worldwide, and smoking-related illnesses are responsible for a significant portion of healthcare costs in North Macedonia. The article highlights the serious health consequences of smoking, including respiratory problems, increased risk of lung cancer, heart disease, stroke, and negative effects on mental health.

The aim of the work: The primary objective of this study is to identify tobacco usage among young individuals in Tetovo within a one-year timeframe, while also examining its correlation with prior research conducted by other authors in their respective databases.

Material and Methods: The nicotine urine test measures the level of nicotine and its metabolites in the urine and is usually used to determine if a person has been exposed to nicotine in the past 2-4 days. The nicotine blood test measures the level of nicotine in the blood and is typically used to determine if a person has been exposed to nicotine within the past few hours. The saliva test measures the level of nicotine in the saliva and is usually used to determine if a person has been exposed to nicotine within the past few hours. The breath test measures the level of carbon monoxide in the breath, which is a byproduct of nicotine metabolism, and is usually used to determine if a person has been smoking or using tobacco products. Lastly, the hair test measures the level of nicotine and its metabolites in the hair and can detect nicotine use up to several months after exposure. However, it is important to note that these tests can also detect secondhand smoke exposure, so accurate information about the level of exposure is crucial. Additionally, some of these tests may have limitations, and false positives can occur, so they should be used in conjunction with other diagnostic methods.

Results: Out of the 13 articles related to young people, 4 articles were generated by the Center's data and 9 articles were from national datasets. Some articles included reviews or data analyses from other datasets. The majority of articles were either cross-sectional or observational, and many of them focused on the prevalence of tobacco use or specific tobacco products. The priority areas were addressed with topics such as impact analysis, toxicity, health effects, addiction, marketing influences, communications, and behavior.

Conclusion: Overall, the findings contribute to the growing body of scientific evidence that can inform future regulatory efforts to reduce and prevent tobacco use among young people. As young people are at a higher risk of developing addiction to tobacco products, it is crucial to address their perceptions and attitudes towards them. The

passage highlights the importance of education and marketing campaigns in changing these perceptions, as well as the need for regulatory efforts to limit access and curb marketing practices that may appeal to young people. Smoking is a leading cause of premature death and disease worldwide, and smoking-related illnesses are responsible for a significant portion of healthcare costs in North Macedonia. The article highlights the serious health consequences of smoking, including respiratory problems, increased risk of lung cancer, heart disease, stroke, and negative effects on mental health.

Keywords: smoking, tobacco usage, youngsters.

IDENTIFICATION OF ADHD AND TYPICAL BEHAVIORAL DISORDERS IN CHILDREN AGED 6-11 YEARS

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Abstract

ADHD (Attention deficit hyperactivity disorder;) is one of the most common neurodevelopmental disorders of childhood. It is usually first diagnosed in childhood and often lasts into adulthood. Children with ADHD may have trouble paying attention, controlling impulsive behavior (they may act without thinking about the outcome) or be hyperactive. The main symptoms of ADHD are: lack of attention, hyperactivity and impulsivity, each child who has a diagnosis of ADHD can be said to have a combined form of the disorder where the main symptoms of the disorder dominate, and a combination between signs of the aforementioned. Attention deficit disorder is a disorder of a neurobiological nature, a possible imbalance of specific neurotransmitters, which means that the child cannot overcome this disorder by trying harder to concentrate or pay more attention. This study aims to present data and facts about ADHD in children aged 6-10 years, and the problematic behaviors that appear. The study was conducted with the participation of 30 children, where it was found that a considerable number of children manifest specific behavioral disorders related to ADHD. According to the data of the study, behavior disorders such as: lack of concentration, lack of patience to complete the task, do not sit still during the lesson, talk incessantly, avoid certain tasks, are observed in a considerable number of children, but in this way less obvious problems are observed, in relation to following instructions, avoiding tasks, moving without sense in the school premises. This study resulted in conclusions and recommendations for specialized treatment of these children and their integration towards normal development.

Keywords: Identification, ADHD Disorders, Behavior, Children.

LIPID PROFILE OF PREGNANT WOMEN

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Abstract

Introduction: The period of pregnancy in healthy women is associated with many endocrinological changes but with changes in lipid metabolism. In recent years, with the excessive appearance of obesity, we are often faced with pregnant patients with cardiovascular diseases, hypertension, preeclampsia and diabetes and other disorders. High lights of the lipid profile. Lipid disorders and their pathophysiology during pregnancy have not been widely studied, therefore, in recent years, due to the malnutrition of pregnant women, studies should be done on the role and changes of the lipid profile in order to prevent side effects in the maintenance and growth of the fetus, as well as the prevention of the complications that bring increased concentrations of lipid fractions to the pregnant woman. Lipid fractions during pregnancy are manifested by the accumulation of fat during the different trimesters of pregnancy, especially during the second and third trimesters.

Purpose of the study: the aim of the work was to determine the lipid profile (total cholesterol, LDL-ch, HDL-ch and triglycerides (TG)) as well as their changes during normal pregnancy.

Material and methods: in our study, 100 pregnant women with the same average age-30,00± 4.00 years, are included the material for analysis from pregnant women was prepared in the Clinical

Laboratory at Clinical Hospital-Tetovo. The blood of all types pregnant women was taken at 8:00 a.m. after a 12-hour fast for three months with three measurements. In the period from January to July-2022. All participants gave written consent. Lipid fractions (tCh, TG, HDL-ch, LDL-ch) were analyzed in all subjects every third month.

Statistical processing of the material: From the statistical methods, arithmetic mean value, standard deviation $X \pm SD$ were used. The comparative statistics of the lipid parameters between the analyzed groups were analyzed with students "t" dependent and independent samples according to the Mann-Whitney U-test and Wilcoxon- this test. The results of the lipid fractions will be shown tabularly and graphically with the statistical program SPSS V26.

Results: the mean values of total cholesterol (tCh) showed a progressive increase starting from the second trimester - 6.80 ± 1.30 mmol/l with the highest in the third trimester - 7.30 ± 1.00 mmol/l. The mean values for High-Density Lipoprotein cholesterol (HDL-ch,) in the second trimester were 1.15 ± 0.80 mmol/l with the lowest values in the third trimester - 1.00 ± 0.20 mmol/l, values of triglycerides (TG) showed a progressive increase starting from the second trimester - 2.40 ± 0.70 mmol/l with the highest values in the third trimester - 2.90 ± 0.90 mmol/l. LDL-ch values in the second trimester were 4.0 ± 0.70 , while in the third trimester they were 4.70 ± 0.80 mmol/l. The difference from the obtained results of the lipid fractions in pregnant women between the first trimester and the third was with a statistically significant difference for $p = 0,0001$.

Conclusions: In our work the levels of total cholesterol, triglycerides, and LDL-ch were not significantly higher than in the second and third trimesters, even in the third. The increase was greater in the third quarter compared to the previous year. HDL-ch was even

lower in the third trimester compared to the second trimester. The study concluded that pregnancy is associated with a changed lipid profile, which can act as a risk factor in the manifestation of cardiovascular diseases, diabetes gestational, preeclampsia, etc. therefore, the evaluation and profile of lipids during pregnancy should be recommended in order to prevent the harmful effects of dyslipidemia related to pregnancy.

Keywords: pregnancy, Lipid fraction(Total cholesterol-tCh , Low-Density Lipoprotein cholesterol -LDL-ch,Triglycerides-TG) and High-Density Lipoprotein-HDL-ch.

IMPORTANCE OF GENETIC SCREENING FOR PREVENTING FUTURE VENOUS THROMBOEMBOLIC EVENTS IN YOUNG PATIENTS IN THE POST COVID-19 ERA: CASE REPORT

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Abstract

Evidence are reporting doubling in the incidence and mortality form venous thromboembolism events (VTE) since the start of the pandemic in 2020 compared with the same periods before the pandemic, with underlying pathophysiological mechanism partially known.

There are a lot of risk factors related to VTE, but hypercoagulability associated with SARS-Cov-2 infection during the past 3 years seems to be at the first place.

Since our clinical practice we see more and more VTE among young patients, our intention is to identify if there is a genetic predisposition for developing VTE and what is the correlation with previous SARS-Cov-2 infection.

In this case, the 42 year old patient, returns to our clinic three days after her first consultation because of tachycardia and shortness of breath, but this time she presented with pain and swollen left leg, increased levels of d-dimers (9264 ng/L). During her hospitalization

we performed, extensive laboratory examination, venous Doppler of lower extremities, echocardiography, CT angiography. Genetic examinations were also performed using white cells from peripheral blood sample, using the real-time PCR method testing the 12 genes responsible for thrombophilia, resulting with a mutation in the second allele of the Factor XIII, mutation in the first and the second allele of MTHFR A1298C, first and the second allele of the MTRR A66G and the second allele of the B-fibrinogen.

It can be concluded that mutations in the genes are associated with an increased risk of thrombophilia, thus genetic screening and optimization of anticoagulant therapy for young population is very important in order to prevent complications related to VTE.

Keywords: deep vein thrombosis, pulmonary embolism, genetic screening, thrombophilia, Covid-19.

EPA AND DHA ISOLATED FROM EUPHASIA SUPERBA REVEALS TO GIVE BETTER RESULTS IN COMBINATION WITH STATIN THERAPY IN PATIENTS WITH DYSLIPIDEMIA

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Abstract

EPA and DHA as the main components of the krill oil extract (aphasia superba) have been demonstrated their lipid-modifying effects in some clinical trials. Krill oil is also rich in phospholipids which increases their bioavailability comparing to fish oil.

We aimed to observe the effectiveness of using krill oil in reducing the level of total cholesterol, LDL cholesterol and triglycerides, either using as a monotherapy or in combination with statins in patients with dyslipidemia.

A total of 90 individuals were enrolled in the study, divided arbitrary in two major groups: primary and secondary dyslipidemia group. The first group was divided in two subgroups: The Krill Oil group (n=29) and no-therapy group (n=17). The second group was also divided in two subgroups: the Krill Oil + statin group (n=21) and the only-statin group (n=23). Analysis of the lipid profile was done at the baseline and after 6 months, using Wilcoxon signed ranks to assess differences between two points.

Individuals with secondary dyslipidemia treated with a combination of Krill oil and Statin demonstrated significantly lower values of Total Cholesterol (30.9%; $p < 0,001$), LDL-c (17.8%; $p < 0,001$), Triglycerides (29.7%; $p < 0,001$), and had higher significance in improving HDL-c levels (6.1%; $p = 0,0027$) which was not seen to be at this levels in the only-statin group (2.9%; $p = 0,16$). Individuals with primary dyslipidemia, treated with Krill oil demonstrated significantly lower values of Total Cholesterol (14.7%; $p < 0,001$), LDL-c (6.2%; $p < 0,001$), Triglycerides (25.3%; $p < 0,001$), while the no therapy group had minimal changes but not statistically significant. The Krill oil improved HDL-c levels (6.3 %; $p = 0,0003$), comparing (1.8 %; $p = 0,22$) of the no-therapy group.

Regarding the results from this study it can be concluded that Krill oil may be helpful and an asset in treating successfully patients with dyslipidemia.

Keywords: Dyslipidemia, EPA, DHA, krill oil, statin.

HIV/AIDS: DESIGNING A TESTING PROGRAM IN OUR COUNTRY

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Abstract

Aims: Over the past 30 years, testing to confirm HIV/AIDS has increased significantly. However, a large part of the population that carries the disease remains undiagnosed. HIV/AIDS is a global pandemic that has killed more than 36 million people since 1981, and according to recent studies by the WHO, there are currently about 31–35 million people living with AIDS.

Purpose: Pointing out the knowledge that different individuals have about this disease and presenting how many of them support the design of a testing program in our country, improving not only survival but also the quality of life as well as the protection of other individuals from infection.

Methodology: Regarding this topic, a study was designed referring to a questionnaire with seven questions about HIV/AIDS, and the time available for each subject lasted about 3 minutes.

Result: The study included 100 subjects, 50 women and 50 men, aged 18–45. According to the study, it was found that although the majority were sufficiently (33%) or slightly (53%) informed about HIV/AIDS and 34% of them had encountered an STI at some point in their lives, only 13% of people had ever performed it. the HIV test, while 87% did not.

Conclusions: Designing a testing program brings many advantages for everyone, whether a child or an adult, man or woman. It enables

the improvement of the quality of life, the survival rate, and the life expectancy of infected individuals.

Keywords: scheduled testing, HIV/AIDS, premarital testing, prenatal testing, pandemics, epidemic.

CORRELATIONS OF PROPEDEUTICS FINDINGS BETWEEN COMPUTED TOMOGRAPHY AND LUNG ULTRASOUND IN LUNG DISEASES

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Abstract

Introduction: I can't begin the introduction without the thoughtful saying "*The mind never thinks without an image.*" — Aristotle. Of the two types of memories that can be accessed, the visual one is primary. The most common symbol of medicine is stethoscope, invented 200 years ago. Do we trust to stethoscope still to further diagnostic work-up or its findings have to be verified by new diagnostic tool next to the bed of patient? Many studies have shown that sensibility of stethoscope examination is between 30-70 percent meanwhile lung ultrasound has superiority which reaches the figures up to 95% All studies agree about usefulness of lung ultrasound. But who would be the propedeutics of lung ultrasound images for different lung diseases especially when this examination is done at the patient's bedside?

Aim of study: To reveal as much as possible the propedeutics of lung ultrasound images in different lung diseases.

Method: The study is prospective one. We compared the diagnosis and findings of lung CT with those of lung ultrasound in 256 patients.

According to CT findings we have tried to reveal propedeutics of LUS in different lung diseases. We have also tried to determine the propedeutics of LUS in acute lung diseases. The LUS examination has been done by handheld ultrasound scanner equipped with cooling fan.

Results and discussion: The diagnosis and number of patients from 256 studied patients have been as follow: lung cancer 67ps; pneumonia 35ps; COPD&Asthma 34ps; pulmonary thromboembolism 21ps; exudative pleural effusion 20ps; diffuse lung diseases 19ps; bronchiectasis 11ps; COVID-19 10ps; pericarditis 10ps; transudative pleural effusion 6ps; tuberculosis 5ps; pulmonary edema 4ps; pneumothorax 3ps; lung echinococcus 2ps; pneumoconiosis 2ps; obstructive atelectasis 2 ps; thoracic trauma 1ps. The following lung ultrasound images propedeutics have been studied: A-lines; A'-lines; B-lines; B'-lines; waterfall -sign; C-lines; hypo echoic densities; hiper echoic densities; vascular sign; bronchial sign; jellyfish sign; septal pleural sign; hepatisation sign; shred sign; hiper or hypo echoic pulsation sign; Merlin space size; Merlin space regularity; diaphragmatic paresis and normal presentation of lung affections.

Conclusions: The combination of propedeutics profiles of LUS with clinical data can provide a potent diagnostic aid or can increase the diagnostic accuracy in patients with lung diseases especially in emergency patients, outpatients and in following intensive unit care patients. LUS fills the diagnostic gap that creates stethoscope examination and not rarely the lung radiography. Practical application: LUS can be very useful in patients with acute lung or cardiovascular diseases which are presented with respiratory suffering. It can be used to follow up dhe course of diseases, avoiding the radiation and cost radiographic examination.

Keywords: Lung ultrasound, propedeutics of lung ultrasound emages, bronchiectasis, pulmonary embolism, lung cancer, lung abscess, lung echinococcus.

MANAGEMENT OF GALLSTONE-INDUCED ACUTE PANCREATITIS

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Abstract

Acute pancreatitis is a serious disorder which in most cases is a consequence of gallstone disease. The disease is more common in women in their sixth decade of life. Although in most cases it passes within three to five days, sometimes it can become seriously complicated, threatening the patient's life. Risk factors for acute pancreatitis are the presence of stones in the biliary tract as well as obesity, pregnancy, cholesterol reducing drugs, cirrhosis, and diabetes. However, it is estimated that gallstones, microlithiasis, and biliary sludge account for 35–75 % of cases of acute pancreatitis. An obstruction of the bile duct by an impacted stone is the most widely accepted mechanism behind gallstones pancreatitis.

Case report: A 53-year-old patient was urgently admitted to the surgery department due to severe abdominal pain localized in the epigastric and the right subcostal region which radiated to the lumbar region and the right shoulder. During the palpation of the abdomen, the patient referred to expressed pain along all the quadrants and the impression of a surgical abdomen was obtained. During auscultation, peristalsis was not heard and the impression of paralytic ileus was obtained. On admission, the patient appeared to be seriously ill, dehydrated and with intermittent vomiting. Hypotension, tachycardia and tachypnea were recorded in the patient during the primary examination. Biochemical analyzes revealed high levels of amylase and lipase in the blood. Slightly increased levels of triglycerides and

calcium were also recorded in the serum. Liver function testing showed an increase in the level of ALT and AST as well as bilirubin. The ultrasound examination detected gallstones in the gall bladder as well as a slight increase in the diameter of the choledochus. Contrast-enhanced computed tomography (CT) showed a pronounced edema of the pancreas, peripancreatic fluid and a dilated common bile duct. After hospitalization, aggressive fluid resuscitation with intravenous fluids and pain control began. At the same time, a nasogastric tube was placed and feeding was stopped. The patient's condition began to improve significantly and on the fifth day after hospitalization, she continued outpatient treatment. Cholecystectomy was suggested to the patient after complete rehabilitation.

Conclusion: A quick understanding of the etiology and severity of the disease and the available therapeutic options are very important in the treatment of patients with gallstone pancreatitis.

Keywords: gallstones, pancreatitis, treatment.

ACCIDENTAL EXPOSURE TO BIOLOGICAL MATERIALS AMONG NURSING STUDENTS

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Abstract

Biological risk is one of the main risks for healthcare workers and nursing students in their hospital activity. In particular, students represent a category at risk, due to inexperience and lack of technical skills. During hospital practice, they are in direct contact with biological materials (blood, saliva, other body fluids, respiratory aerosols, etc.) as well as with blood or other contaminated materials or instruments potentially infected biological material substrate. Exposure to biological risk is caused by accidental needlestick or sharps injuries (72%), followed by mucocutaneous contact (28%). The objective of this study was the identification of incidents that occurred as a result of exposure to biological agents and the use of protective measures during professional practices. An electronic questionnaire was administered to students attending the first, second and third years at the Faculty of Technical Medical Sciences, Elbasan. The questionnaire consisted of sociodemographic data, the rate of exposure to biological agents and the use of PPE. The results of the study showed 59.5% of cases of biological injuries where the highest number occurred in the practice of the first year. 47.8% of students suffered injuries from needle piercing, where the needle was sterile. The ward with the highest number of incidents turns out to be infectious with 53.9% of cases. According to 84% of the students, nurses must wash their hands and use a face mask, as well as sterile

gloves as a protective measure before performing various medical techniques. Safety training should start early in the training curriculum with theoretical and practical courses as well including awareness sessions. Safety and biosecurity in the workplace must be integrated and modeled in undergraduate and postgraduate courses to create a clear safety culture.

Keywords: biological risk, nurse students, accidental exposure, protective measure.

SURGICAL SITE INFECTIONS: MICROBIOLOGY, TREATMENT AND PREVENTION

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Abstract

Surgical wound infection is a worrisome problem not only for patients but also for surgeons, nurses and health care systems. Nosocomial infections continue to remain a serious problem that is difficult to eradicate.

Aim of the study: The aim of this study is to determine the microbiological causes and treatment of surgical site infections (SSI) in patients after surgical intervention in the Department of Urology in the Clinical Hospital of Tetova.

Material and methods: During the year 2020-2021, 83 patients with various urological pathologies were operated in the Urology department. Some of them after surgical intervention were complicated by infection of the operative wound. The data of interest for this study were obtained from the patient records.

Results: Out of 83 included in this study and operated with open urological interventions during the year 2021 - 2022, in 9 of them (10.8%) an infection of the operative wound was recorded. Microbial culture from the wound is collected with two cotton-tipped swabs moistened with sterile non-bacteriostatic saline. Bacteria *S. Aureus*, *Klebsiella* and *Enterococcus* were isolated from the wounds, while the antibiogram showed the sensitivity of these bacteria to antibiotics such as Amoxiclav, Klimicin, Edicin, Amikacin, etc. The wounds

were treated with regular cleaning each day with disinfectant and physiological solution. The duration of hospitalization of these patients was extended by five to eight days.

Conclusion: Surgical wound infections remain a worrying problem even in our clinic, the eradication of which requires the commitment of all medical personnel and patients. In order to minimize these problems nurses care is of great importance.

Keywords: nurses, wound, infection.

CONSERVATIVE TREATMENT OF SPONTANEOUS CORNEAL PERFORATION IN AN PATIENT WITH RHEUMATOID ARTHRITIS

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Abstract

Introduction: Spontaneous perforation of the cornea is a consequence of chronic autoimmune diseases that lead to the thinning of the corneal layers and the loss of their ability to regenerate or close eventual defects that may be superficial or deep. Usually, the treatment of perforation or spontaneous ruptures must be surgically repaired with sutures or a total or partial corneal transplant. The purpose of our study is to demonstrate a case control of a successful conservative treatment of a spontaneous corneal perforation in a 79-year-old patient with a diagnosis of rheumatoid arthritis for over 25 years without regular treatment.

The patient presented with severe pain in the left eye, loss of vision and blepharospasm, eyelid edema and redness. Conjunctival and ciliary congestion and a linear perforation of the cornea from 9 to 3 o'clock and partial iris prolapse were observed in the ophthalmological examination using a biomicroscope slit lamp. The patient's vision was HM(hand movement) and intraocular pressure was 7.1mmHg. During other examinations by optical coherence tomography of the anterior segment of the eye was detect total athalamia (loss of the anterior chamber) and adhesion of the iris to the endothelium of the cornea, in the center of the cornea in the OCT-A image was observed discontinuity of its layers and prolapse of the iris in the place of perforation. In ultrasonography of eye and orbit, no

significant changes were seen except for irrelevant exudative vitreous change. The fundus was impossible due to non-transparent mediums. Due to the comorbidities and poor surgical prognosis, conservative treatment was decided with antibiotic drops (moxifloxacin), corticosteroid drops (dexamethasone), lubricants, regenerative gel. The placement of therapeutic contact lenses was also prescribed. After 7 days, the formation of the anterior chamber and the retraction of the iris as well as the partial closure of the corneal perforation were verified. On the 14th day, all complementary examinations were repeated, where again the condition had improved with total closure of the perforation and the patient's BCVA was 6/20, IOP 12.2mmHg.

Conclusion: The conservative treatment of spontaneous perforation of the cornea is a success for the patient mainly where without surgical intervention the healing and the return to normality of the histological and anatomical condition of the cornea and other parts of the anterior segment of the eye.

Keywords: Cornea, Optical coherence tomography, conservative treatment.

AGE-RELATED MACULAR DEGENERATION: UNDERSTANDING RISK FACTORS, SYMPTOMS, AND TREATMENT

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Abstract

Age-related macular degeneration (ARMD) is a prevalent eye condition affecting older adults, with significant implications for vision and overall quality of life. As the global population continues to age, understanding the risk factors, symptoms, and treatment options associated with ARMD is essential for promoting proactive measures in eye health and facilitating early intervention. This article provides a comprehensive overview of ARMD, discussing the two primary forms of the disease, risk factors, diagnostic methods, and current treatment strategies. Furthermore, we explore the latest advancements in research and potential future treatments that may revolutionize the management of ARMD. By fostering awareness and understanding of ARMD, we hope to promote collaboration among medical professionals and the general public to improve outcomes for those affected by this challenging disease.

Keywords: Age-related macular degeneration, ARMD, AMD, diagnostic methods, treatment strategies.

DIABETIC RETINOPATHY AND MACULAR EDEMA AS ONE OF THE LEADING CAUSE OF BLINDNESS WORLDWIDE

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Abstract

Introduction: Diabetic Retinopathy is one of the major complications of diabetes and is a leading cause of blindness and vision impairment. The clinical risk factors for DR have long been recognized to include diabetes severity and duration, hypertension, presence of other complications, anemia, hyperlipidemia, insulin resistance and deficiency, and a family history of DR.

Indeed, much work remains to be done to determine the potential contribution of genetic factors and the impact of systemic inflammation.

Multiple treatment options have been used over time to attempt to modify the natural progression of the disease in both proliferative diabetic retinopathy (PDR) and diabetic macular edema (DME). These two retinal complications are the result of microvascular occlusions and vascular hyperpermeability and are considered one of the leading causes of irreversible blindness in patients of working age worldwide. It is now well demonstrated that PDR and DME are associated with increased levels of inflammatory and pro-angiogenic factors in the ocular compartment. To date, laser photocoagulation, vascular endothelial growth factor (VEGF) inhibitors, and

corticosteroids have demonstrated efficacy in their treatment in large randomized controlled trials and in real-life observational studies.

Conclusion: Prevention of vision loss requires better understanding of the fundamental processes that impair vision. Technological advances have allowed newer imaging modalities to be applied to retinal diseases, both in clinical practice and research. The key to preventing and controlling ocular complications from diabetes is strict glycemic control and control of blood pressure. The prognosis for patients with diabetes and the ensuing complications improves with overall enhancements in diabetes management, but the ocular complications are still diagnosed and treated late in terms of the biological processes.

Keywords: diabetic retinopathy, macular edema, blindness, diabetes.

PHLEBOTHROMBOSIS AND TROMBOPHLEBITIS (TROMBOSIS VENAE FEMORALIS AND VENAE POPLITEA - CASE PRESENTATION)

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Abstract

Phlebothrombosis is a thrombotic occlusion of the deep venous system that differs from thrombophlebitis, which is acute segmental or entire superficial venous thrombosis with signs of inflammation of the vein or surrounding tissue. In the etiology of these diseases, in addition to the mechanical, chemical and radiation factors, viral and bacterial infections are also a factor for the appearance of acute thrombosis as damage to the vein endothelium.

Hospital and post-hospital conditions such as: myocardial infarction, cerebrovascular insult, post-thrombotic conditions, operations, births, pregnancy, neoplasms, especially those of the liver, pancreas and lungs, disorders of the myeloproliferative system, DIK, dysfibrinogenemia, gallstone diseases, SLE, polyglobulia, estrogens, nephrotic syndrome, dehydration are precipitating factors for thrombosis.

In physiological conditions, the organism is protected from thrombosis by the mechanisms against blood coagulation and fibrinolysis, as well as by the intact endothelium of the blood vessel itself. For thrombosis to occur, only the increased blood viscosity or

the deregulation of one of the factors of Virchow's triad is not sufficient; endothelial injury, blood stasis, hypercoagulability as mentioned in the standard literature.

The clinical expression of these conditions was associated with: edema of the extremities, redness, cyanosis of the skin, dilated superficial veins and pain on palpation, as well as general symptomatology: lethargy and slightly increased temperature.

Thrombophlebitis is acute segmental or entire superficial venous thrombosis accompanied by local inflammation. The precipitating factors are the factors mentioned above as well as a primary varicosity where along with blood stasis, they develop aseptic inflammation, often in the guise of Buerger's Morbus. In the etiology of this entity, well-known authors mention trauma, septic conditions, contraceptives, varicose veins, connective tissue diseases, intravenous injections as the cause of these septic conditions. The clinical expression of thrombophlebitis was: inflammation, erythema, edema of the extremity, pain and increased temperature. This type of superficial thrombophlebitis can lead to - deep vein thrombosis.

In medical statistics, these conditions are present in 1-2 patients in 1000 annual cases, 20% death in the first year or a third relapse.

The purpose of the paper was to present the conditions of phlebothrombosis and thrombophlebitis in our patients, methods and treatment, as well as the authors' recommendation in this regard.

Material, methods and results: the histories of 22 patients with thrombophlebitis with male predominance, age range 46-79 years, and 4 patients with phlebothrombosis, such as (69, male and 3 female subjects, age 54 years, 67 years, 52 years old with pathology of v. poplitea, v. subclavia that I will present below.

The methods were: physical examination, laboratory routine, SE, hemogram, De-dimer, CRP, serum biochemical tests, coagulant profiles, hemostasis, urea, creatinine kinase, LDH, electrolytes, cardiospecific enzymes, doppler of extremities as the main method, ECG, Echocardiography , chest CT in cases of suspected thromboembolism.

The therapy given was; antibiotics for thrombophlebitis, analgesics, derivatives of xanthine (Pentoxifylline) LMWH, heparin, Clexane, Accenocoumarole, fibrinolytics as well as Rivaroxaban for phlebotromboses.

Keywords: phlebothrombosis, thrombophlebitis, anticoagulants, antiaggregants, heparin, rivaroxaban.

DIAGNOSTIC ELEMENTS AND THE ALGORITHM IN MANAGING THE VIRAL HEPATITIS INFECTION

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Abstract

The diagnosis and the management of different forms of hepatitis, remains an open challenge for the general doctors. The presence of more than one viral infection is another challenge which can't be evaluated without the help of these methods. The combination of immunometric methods in defining the level of antibodies against the virus, with the traditional biochemical methods evaluating the functional status of the liver, fills most of the hallmarks in creating the algorithm of diagnosis and management of the hepatitis infection. In our study we present the laboratory results of 23 patients who presented with signs and symptoms suspecting hepatitis and their blood samples were taken for examination at the “Euro Lab” laboratory in Tirana. Laboratory examinations consisted in the evaluation of HBs Ag, Anti HBc IgG, Anti HBc IgM, HBe Ag, Anti HBe, Anti HBs dhe HCV Ab. Levels of total bilirubin, unconjugated bilirubin, GPT, GOT, ALP and GGT, were also measured in the blood samples. The level of antibodies was measured applying the standardized methods of immunoenzymology, while the level of bilirubin and enzymes was measured by chemical methods.

Keywords: Hepatitis B, Algorithm, Serology.

THE VIOLENCE AT THE WORKPLACE AGAINST THE NURSE PERSONNEL IN ELBASAN

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Abstract

Introduction: The violence at the workplace against the medical personnel these days can be defined as a global problem.

The Purpose: The identification of the primary characteristics of the violent episodes against the nurse personnel in the prefecture of Elbasan and the analysing of its short and long term effects.

Methodology: It is a cross- sectional study conducted through the administration of a structured questionnaire, at the nurse personnel in the Regional Hospital, The Specialties Policlinic and Health Centers in Elbasan. The compilation of the questionnaire was conducted through the use of the Google Forms platform. The duration of the questionnaire was from 18- 20 April 2023. The data was analyzed by the SPSS version.

Results: 84% of the participants in the study were females, and 37% were males. 54% of the surveyed admitted that during their work experience they have encountered violence phenomena. As short term effects are considered: 17.8% agitation/shaking; 21.5% fear; 11.1% calm; 4.0% courageous. The sample has considered as long term effects such as: lack of professional gratification (12.9%); uncertainty during work (16.9%); demoralization (7.7%); stress (17.5%).

Conclusions and Recommendations: The nurse personnel is most likely to experience violence during work. Such phenomena have a deep psychological impact causing demoralization, anxiety, fear, continuous panic even lack of the will to practice their profession. It is of a great importance to prevent this phenomena.

Keywords: violence, Elbasan, nurse, health center, hospital.

HERNIAS, CLASSIFICATION AND EFFECTIVE TREATMENT IN THE DISTRICT OF ELBASAN FOR THE PERIOD 2018-2021

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Abstract

A hernia is the abnormal protrusion of an organ, tissue, or structure through the wall of the cavity in which it naturally resides.

The defect through which an organ protrudes is congenital or acquired, wrapped by a peritoneal sac, without breaking the skin.

Hernias are classified into different types, each of which has a specific treatment.

Purpose: The purpose of this paper is to present a general overview of hernias and their classification. Familiarity with patients who have hernia disease, the type of hernia, gender, age group and specific treatment related to the typology of hernia.

Research methodology: The study focuses on the period 2018-2021. The study included patients with hernia disease in the surgery service at the "Xhaferr Kongoli" regional hospital. During this period, 1333 patients were studied. The results of the study are presented with graphs and tables for the period 2018-2021. The data were obtained from the registers of patients admitted to the surgery service at the

"Elbasan Regional Hospital" as well as from the records at the "Xhaferri Kongoli" hospital in the city of Elbasan.

Results: The results of the study are presented with graphs and tables for the period 2018-2021. The data were obtained from the registers of patients admitted to the surgery service at the "Elbasan Regional Hospital" as well as from the file at the "Xhaferri Kongoli" hospital in the city of Elbasan.

Conclusions: In the statistical study carried out for the period 2018-2021, we came to the conclusion that individuals are always affected by hernia disease. From the results discussed above, it follows that:

- Individuals are always exposed to hernia diseases.
- The most affected gender are men.
- The most affected age groups are over 65 years old.
- The village is more exposed to hernia patients.
- The most frequent diagnosis is inguinal hernia.

Keywords: Hernia, Inguinal Hernia, Femoral Hernia, Epigastric Hernia, Umbilical Hernia, Incisional Hernia, Diaphragmatic Hernia.

EMERGENCY NURSES' EXPERIENCES AND BARRIERS IN PAIN MANAGEMENT

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Abstract

Pain management is one of the most common challenges in the Emergency Department (ED). This study aimed to investigate emergency nurses' experiences during pain management and identify the barriers they encounter when providing this care. This is a qualitative study. In April 2023, interviews with open-ended questions were conducted with the emergency nurses of the Regional Hospital "Xhaferr Kongoli" Elbasan. The data were analyzed through content analysis. Ten nurses were interviewed, with a mean age of 40.1 years and with 7.3 years of work experience in the ED. We concluded that after assessing the patient with the presence of pain, the nurses operate according to protocol. Two of the main obstacles in pain management have been identified; the lack of cooperation with the patient and the lack of adequate equipment to support nursing management. Nurses that participated in this study reported that the pain assessment at the right time, laboratory and imaging tests help to go through these difficulties. Moreover, participants reported the need for increased nurse-patient collaboration, patient-centered care, and optimal pain relief care while paying attention to each individual's special needs.

Keywords: pain management, nurse, experience, barrier, emergency department.

MEDICAL ABORTION

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Abstract

The right to abortion is regulated by the Law on Abortion, which includes the right to terminate pregnancy until the 9th week. After 12 weeks, it is allowed in cases where there is medical indication of termination, such as when it is found that pregnancy poses a threat to the life of the woman or leads to a serious health disorder during pregnancy, childbirth or after birth. Also, in cases where medical examinations are expected to have children with severe abnormalities, when conception occurred as a result of rape or incest, when the woman struggles with personal, domestic, material or health issues.

Medical abort is a new method of termination of pregnancy, which is carried out with the use of two types of tablets, taken by mouth or by vaginal application. The combination is Misopristol and Mifepristone, which inhibits embryo development, tumbling of uterine mucus, cervical dilation, and causes uterine contractions and bleeding similar to menstrual ones. This type of termination of pregnancy is possible up to 63 days after the first day of the last menstruation. In fact, a medical abortion can be performed up to the 24th week, but the best effects are achieved in the first trimester. Pregnant women can have side effects, such as headache, vomiting, diarries, abdominal pain. These symptoms can be avoided if tablets are used by vaginal pathways. For side effects, ibuprofen can be used, but not aspirin. This type of treatment is not allowed in women with

suspicion of ectopic pregnancy, liver function disorders, women using long-term corticosteroids, in those with severe anemia and coagulopathy.

Aim: The purpose of this study was to demonstrate the advantages and efficacy of medical abortion compared to surgical ones, such as: high efficiency, success rate up to 98%, application of early pregnancies, no need for anesthesia and antibiotics, no hospital stay is necessary, accompanied by signs such as spontaneous abortion, etc.

Method: Of the 100 patients aged 17-42 who used the combination of these medications, 70% were pregnant by 8 weeks, and the rest were 8-11 weeks pregnant. Pregnant women have initially used Mifepristone by mouth with a dose of 200mg; after 36-48 hours, 800 microg of Misoprostole, with vaginal or sublingual application.

Outcomes: In 98% of these cases, there was bleeding within 4-24 hours, i.e. there was bleeding. Successful abortion, while in the rest (which were between 9-11 weeks), surgical intervention was necessary.

Conclusion: While medical abortion has more advantages than surgical, it is more than necessary to formalize and introduce it as a regular treatment procedure for all women who are undergoing such a stressful and emotional situation. The overall cost of medical abortion is lower than the one with the curettage, not to mention the convenience, health safety of patients and the lower probability of possible complications from surgical termination of pregnancy. The controversy about abortion and its kinds in general may be a good discussion to be had in our society, but the final decision must undoubtedly belong to the woman.

Keywords: Medical abortion, Mifepristone, Misoprostol.

THE IMPACT OF ENVIRONMENTAL FACTORS ON THE HEALTH OF THE POPULATION IN THE POLOG FIELD REGION OF THE REPUBLIC OF NORTH MACEDONIA

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Abstract

The impact of environmental factors on the health of the population in the Polog field region of the Republic of North Macedonia.

Recently, the living environment is considered as the main factor for the quality of life and as the main factor for the stimulation of various diseases, with a special emphasis on mental, nervous, cardiovascular and thyroid diseases.

The Republic of North Macedonia and especially the Pollog region in terms of geographical position and climate aspect is considered as a place with different variables such as: temperature, humidity, radioactive exposure, hilly-mountainous relief, and the mountain Sharri ranges in the west and the dry mountain in the connection they limit the dug in of Pollog in all directions, such as north-east and south-east, and make the living environment in the air as well as the

water and land deteriorate even during the summer season and especially in the winter period.

With special emphasis, we emphasize the winter season when we have an alarming state of air pollution, such as certain regions of the RNM and especially the Pollogut region with the cities of Tetovo and Gostivar and surrounding areas.

Recently, the city of Tetova and its surroundings is considered one of the most polluted cities in the country, region and wider and is compared and counted as one of the most polluted cities in the world, then this phenomenon inevitably leads us to unwanted consequences for the population that lives and operates in this region.

As a result of environmental factors such as air pollution and other related factors such as: stress, temperature, food, social condition, mental state and other related factors can lead to disorders in the body and lead to diseases that attack the nervous and cardiovascular , skeletal system and thyroid diaseses.

Many studies talk about the alarming condition of patients who are affected by these diseases, therefore our paper will also focus on the effect of these factors on human health and above all on the actual health condition of the poultry in the Pollog region of North Macedonia.

This paper aims to investigate the potential causes that could affect the health of the population in the Pollog field.

Potential pollutants can be considered: carbon monoxide, carbon dioxide, sulfur dioxide, urban combustion from automobiles, combustion of various physical substances, chemical components from factories, smoke from chimneys from burning oil and coal, combustion from wood in pellet form etc.

The main causes can be considered: air pollution, stress, malnutrition, physical inactivity, socioeconomic status, obesity, etc.

These factors can lead to disorders of the nervous, cardiovascular systems, and thyroid disorders.

Keywords: air pollution, stress, malnutrition, physical inactivity, socio economic status, obesity, nervous and cardiovascular systems, and thyroid disorders.

TREATMENT OF PATIENT PERIPHERAL ARTERY DISEASE – CASE REPORT

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Abstract

Peripheral artery disease of lower extremities includes narrowing or blockage of leg arteries resulting in clinical symptoms such as claudication intermittent, skin discoloration, effluvium, temperature differences between extremities, slight sensory loss and numbness. Lower extremities stenosis can lead to trophic changes such as ulceration or gangrene in severe cases resulting in leg amputation. A major risk factor of this pathological state is diabetes mellitus. Treatment goals include improving blood flow, revascularization and preventing future possible vascular events.

Treatment modalities include percutaneous transluminal artery intervention with balloon angioplasty, balloon expanding stents, self-expanding stents, drug-eluting balloon, and atherectomy.

In our department – Interventional Cardiology in the Clinical Hospital of Tetovo, a patient was admitted with left leg pain during regular daily activities, the patient was diagnosed with diabetes mellitus treated with insulin therapy for five years. The leg was colder in comparison with the other extremity. Tibial and dorsalis pedis pulses were weakened. Ankle-brachial index during initial examination was 0.5 which indicates arterial disease of the limb. Doppler spectrograms were conclusive for femoral artery stenosis. A PTA was indicated.

The trans-radial angiography visualization showed significant stenosis of the left superficial femoral artery, stenting of the artery

was performed through the posterior tibial artery. The iVascular stent 6.0x80 mm was implanted.

After the intervention the patient was transferred to the cardiovascular unit treated with double antiaggregant and anticoagulant therapy. The patient was stable during post interventional period and was discharged home. Symptoms improvement were confirmed within the next examination. Follow up examinations show relieve of symptoms.

Keywords: superficial femoral artery, PTA, limb ischemia.

TREATMENT OF PATIENT LEFT MAIN ARTERY DISEASE– CASE REPORT

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Abstract

Patients with left main disease are commonly presented with chest pain during exercise or regular daily activities. Left main artery stenosis diseases has a high rate of major cardiac event including acute coronary syndrome or sudden cardiac death if not diagnosed and treated properly. Treatment modalities includes percutaneous coronary intervention with stenting or coronary bypass surgery depending on coronary arteries anatomy or comorbidities.

Treatment goals include improving blood flow and preventing future possible cardiac events.

A patient was admitted in the Clinical Hospital of Tetovo with chest pain during regular daily activities, after admission an ECG was performed with slight ST depressions in the inferior and lateral leads. Laboratory testing with cardiac markers was performed. High sensitive troponin levels were elevated above referent values. Hospitalization and coronary angiography were indicated.

The coronary angiography visualization showed significant stenosis of left main artery therefore stenting of the culprit artery was performed. The Resolute Onyx 3.5x22mm stent was implanted.

After the intervention the patient was transferred to intensive care unit treated with double antiaggregant and anticoagulant therapy. The patient was stable during post interventional period and was discharged home. Symptom improvement was confirmed with the next cardiologic examination. Follow up shows complete relieve of symptoms.

Keywords: Left main artery, percutaneous coronary intervention, angina pectoris.

THERAPEUTIC IMPLEMENTATION OF SUBSTANCES WHICH ARE USED AS DOPPING IN SPORTS

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Abstract

“Doping” refers to the use of banned substances in competitive sports. The term anti-doping program refers to any organized system designed to prevent the use of banned substances in sport. Taking into account the side effects that the prohibited drugs cause to athletes and their irrational use, in this study we will examine which groups of drugs are prohibited, the role of the pharmacist in their use and the criteria that must be met for the use of these drugs.

Athletes use drugs, they can not only harm their health, but also give the sport a bad reputation and set a poor example for others. Pharmacologists play an important role in making athletes achieve their goals by improving the quality of life with the help of various drugs and other substances (within standardized limits). Pharmacologists, pharmacists and other health care professionals collaborate can prevent the dangers of unintentional drug abuse in athletes on a regular basis. According to the results obtained from the literature review of scientific works, we can conclude that the prohibited drugs are: stimulants, anabolic steroids, peptide hormones (i.e. human growth hormone [hGH]), alcohol and beta blockers, diuretics, beta agonists -2, anti-estrogens, etc. Each athlete must be

under the supervision of a doctor because if the athlete's condition worsens, then he must be under control due to side effects such as: cardiovascular, central nervous system, respiratory, hormonal, etc.

Keywords: doping, prohibited drugs, side effects.

ASSOCIATION OF POLYMORPHISMS OF THE GENES INVOLVED IN CYCLOPHOSPHAMIDE AND DOXORUBICIN METABOLISM WITH THEIR TOXICITY IN BREAST CANCER PATIENTS

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Abstract

Breast cancer is a major morbidity and mortality factor and is among the most frequent female neoplasms globally. Combined cyclophosphamide and doxorubicin adjuvant chemotherapy is frequently associated with a series of toxic effects of different grades and clinical significance. Constitutive polymorphisms in the genes involved in detoxification and metabolism of chemotherapeutics plays a key role in toxic effects predisposition.

The main goal of this study is to determine the genetic association of polymorphisms rs20325282 in ABCB1 gene and rs1695 (A313G) in GSTP1 gene with occurrence of leukopenia and to estimate the possible predictive value of those polymorphisms regarding the risk of toxic effects and adverse reactions.

The polymorphisms were genotyped in DNA samples from 178 cases of breast cancer treated adjuvantly with cyclophosphamide and doxorubicin, after providing the signed consent from each patient. Statistical analyses were performed comparing the clinical data regarding the toxic effects and adverse reactions with the frequencies of the genotypes and alleles of both polymorphisms.

The analyses indicated that polymorphisms rs20325282 in ABCB1 gene and rs1695 in GSTP1 may have a predictive value in determining the probability and/or risk of occurrence of chemotherapy-induced anemia, fever, febrile neutropenia and oral mucositis.

Those findings could be used prospectively for adjustment and personalisation of the chemotherapy according to the individual genotypes combination in each patient.

Keywords: breast cancer, GSTP1 gene polymorphism, cyclophosphamide, doxorubicin, toxic effects.

EFFICACY OF TRICHLOROACETIC ACID AND INOSIN IN TREATMENT OF HPV (HUMAN PAPILLOMAVIRUS) RELATED INFECTIONS OF THE UTERINE CERVIX

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Abstract

Introduction: There are over 200 types of HPV. Forty of them have a specific tropism for the anogenital region, while 14 are high-risk types. Over 90% of cervical cancers are caused by HPV.

Material and methods: The study has a retrospective character and in it were processed results of 332 subjects with subclinical infection of the cervix with HPV. They were divided into three groups depending on the method of treatment and observation. The first study group included 102 patients treated with trichloroacetic acid (TCA), the second study group included 46 patients treated with inosine and a control group (KG) consisting of 114 patients without therapy.

Results: The efficiency rate of TCA treatment is 81.37%, and it is significantly higher than the cure rate in KG, which was 36.45%, ($p < 0.0001$). The efficiency rate of inosine treatment is 68.42% and is

significantly higher than the cure rate in KG, which is 36.45%, ($p=0.0091$).

Conclusion: Topical application of 85% TCA gave statistically significant results in terms of efficacy in the treatment of subclinical forms of HPV infection, compared to patients followed by expectant management. The efficacy of inosin in the treatment of subclinical HPV infections of the cervix compared with the control group was statistically significant also. Our study prefers topical treatment with TCA of the subclinical HPV infections of the cervix compared with the expectant management and treatment with inosin.

Keywords: Human papillomavirus, trichloroacetic acid, subclinical HPV infection, cervical intraepithelial neoplasia, cervical cancer, inosine.

CONSERVATIVE MANAGEMENT OF CERVICAL PREGNANCY: A CASE REPORT WITH REVIEW OF LITERATURE

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Abstract

Background: Cervical pregnancy is a rare form of ectopic pregnancy in which the embryo implants in the lining of the endocervical canal. Clinical criteria and ultrasound features, supplemented by rapid assay of serum human chorionic gonadotropin (hCG), make the diagnosis easier and more accurate. Depending on the time of diagnosis and the patient's condition, management can be conservative or operative

Case: We present a rare case of cervical pregnancy with all the diagnostic challenges for making an early diagnosis and choosing the right treatment regimen, which can be life saving for the patients and can reduce the chance of severe hemorrhage necessitating hysterectomy or blood transfusion

Conclusion: Early diagnosis, appropriate methotrexate regimen and combination of necessary adjuvant conservative procedures could contribute to successful treatment with preservation of the uterus and future reproductive ability.

Keywords: Cervical pregnancy, human chorionic gonadotropin, transvaginal ultrasound, methotrexate, vaginal bleeding.

GOLDENHAR SYNDROME: A CASE REPORT WITH REVIEW OF LITERATURE

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Abstract

Introduction: Goldenhar Syndrome is a rare clinical entity, which is characterized by craniofacial, ocular and vertebral defects and malformations and its diagnosis is based mainly on clinical features. The cause is an abnormality in MYT1 gene and the incidence is between 1:3500 and 1:5600. Most of the cases are sporadic. It is known as oculo-auriculo-vertebral dysplasia and can also affect the facial structure and other body organs such as the heart, kidneys, lungs, and nervous system.

Case report: A 31 year old patient was admitted to the delivery room because of labor and complete dilatation of the cervix. This was her second and uncontrolled pregnancy and she wasn't aware of her last menstrual period. She had no history of family or personal diseases. The patient gave birth to a baby girl that weighted 2740g, had 47cm length and APGAR score 8/9. The baby showed an asymmetric face in the right half, right eye and right ear completely unformed. Instead of the right ear and around the left ear there was only skin outgrowths and in the left eye there was bulbar dermoid. The lip on the right side was retracted and did not open symmetrically. There was lack of buccal muscles on the left side of the face, palatoschisis and

hemangioma on the right cheek. Following the physical examination and based on the diagnostic tests (CT scans, echocardiogram, ECG, X ray, eye exams and ultrasound), it was concluded that the case was Goldenhar Syndrome.

Conclusion: In Goldenhar syndrome early diagnosis, adequate management, and continued monitoring of the patient are very important to optimal long-term outcomes. In otherwise uncomplicated cases without any systemic associations, prognosis of the disease is good.

Keywords: congenital anomaly, Goldenhar syndrome, oculo auriculo vertebral dysplasia.

INDUCTION OF LABOR WITH PROSTAGLANDIN E2 AND OXYTOCIN VERSUS AMNIOTOMY: ORIGINAL RESEARCH

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Abstract

Introduction: Induction of labor is considered one of the most frequently performed obstetric procedures in the world. In recent years, the rate of induction of labor has been increasing due to the expansion of medical indications. However, there is no international consensus regarding the indications for induction and recommended methods.

Material and methods: This original research is a prospective observational study conducted in Special Hospital for Gynecology and Obstetrics "Mother Teresa" Skopje, Department of Pathological Pregnancy in period of one year from 01.01.2022 - 31.12.2022. The study includes female patients in term of childbirth, from 37 0/7- 41 6/7 gestational age, with an indication for induction of labor. Methods for induction of delivery were the pharmacological methods with the application of vaginal prostaglandin E2 and oxytocin, and mechanic e.g. amniotomy.

Results: The total number of births in one year was 3923. In 444 patients or 11% the birth was induced. Three most common indications for induction of labor were: post-term pregnancy 55% (248 patients), premature rupture of membranes 21% (94 patients) and 14% (64 patients) diagnosed with oligohydramnios and others. Rate of patients diagnosed such as anhydramnios, hypertensive disorders, intrauterine growth restriction and gestational diabetes, were 10% of induced patients. 67% of the patients had successful and safe induction, resulting with vaginal delivery. The rate of success of induction of labor with amniotomy was 12% and the other 21% of the patients delivered their babies with cesarean section.

Conclusion: Induction of labour with vaginal application of prostaglandin E2 and oxytocin shower as superior method, over induction of labour with amniotomy.

Keywords: induction of labor, delivery, prostaglandin, oxytocin, amniotomy.

SIRENOMELIA, MERMAID SYNDROME: CASE REPORT AND A BRIEF REVIEW OF THE LITERATURE

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Abstract

Introduction: Sirenomelia, Mermaid syndrome, is a rare and lethal congenital anomaly, with incidence of one in 60 000–70 000 pregnancies. It consists varying degrees of fusion of the lower limbs, appearing as a mermaid tail, absence of external genitalia and other gastrointestinal defects and presence of a single persistent umbilical vitelline artery, which is the main distinguishing anatomic finding from caudal regression. It is more common in foetuses of mothers with diabetes and monozygotic twins. Young maternal age is a risk factor for this anomaly.

Case report: A 20-year-old primigravida, with uncontrolled pregnancy, was admitted in the delivery room with a history of vaginal discharge and labour. She had no personal or family history of diabetes. She was unaware of her last menstrual period. Her blood count was normal, but the fasting glucose level was 6.8mmol/L, and HbA1c 6,5%. The ultrasound biometrical examination corresponded to 26 gestational weeks and the foetus was demised. Vaginal examination resulted with softening of the cervix and dilatation of 8

cm. The newborn was preterm delivered with assisted delivery according to Bracht. It weighted 970g, it was 30cm long, with APGAR score 0/0. The baby had a normal formed upper part of the body, the pelvic bones were deformed, the lower limbs were united into a single lower limb. The autopsy finding was sirenomelia.

Conclusion: Regular antenatal control with an optimal level of glucose, should be maintained to prevent this anomaly. A routine ultrasound examination is recommended to establish the diagnosis of sirenomelia. Therapeutic abortion can be performed in early pregnancy.

Keywords: sirenomelia, Mermaid syndrome, caudal regression, diabetes.

SECONDARY POSTPARTUM HEMORRHAGE DUE TO PLACENTAL SITE VASCULAR SUBINVOLUTION: A CASE REPORT WITH REVIEW OF LITERATURE

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Abstract

Background. Postpartum hemorrhage (PPH) is important reason for maternal morbidity and mortality. It is directly responsible for one sixth of the mother's death. The primary postpartum hemorrhage, which starts in the first 24 hours of the puerperium is easy to diagnose and treat on time, because the patient is still hospitalized. But the secondary one, which starts 24 hours after delivery and until the end of puerperium is much more dangerous for the patients and the doctors also, because the patient is at her home already and usually comes to the hospital with profuse bleeding and often in shock statement.

Case report. We present a rare case of placental site vascular subinvolution (VSI) in woman after uncomplicated spontaneous delivery where the uterus preservation was mandatory, the procedure to diagnose it, the management and therapy, also a brief review of the literature about the pathological mechanisms of the disease.

Conclusion. Placental site VSI is the rarest cause of secondary postpartum hemorrhage. The purposed mechanisms for developing

VSI as an inadequate interaction between endovascular trophoblast cells and maternal spiral arterioles, the absence of deposition of complement and immunoglobulins in the vessels and overexpression of Bcl-2 antiapoptotic protein do not explain the etiology for developing a VSI. The clinicians misdiagnose it very often because the difficulties of diagnosing VSI in cases when uterus preservation is mandatory. Most often VSI is a diagnosis of exclusion and the therapy is in accordance with the recommendation for treatment of postpartum hemorrhage .

Keywords: secondary postpartum hemorrhage puerperium, vascular subinvolution, vaginal bleeding, placental site, uterus.

OBESITY AND DIABETES. THE DETRIMENTAL INFLUENCE OF FOOD PRODUCTS WITH PALM OIL AT ADOLESCENCE

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Abstract

Introduction: Obesity is multifactorial metabolic disease which causes complications such as diabetes type II, arterial hypertension, ischemic heart disease, brain insulation, atherosclerosis, osteoarthritis, different types of cancers (especially TGI) etc. Diabetes mellitus or diabetes sugar diabetes is a serious disease of childhood and adolescence with serious complications of the patient, family and medical team who care for him.

Purpose: The purpose of this study is to learn the effect of food products that contain palm oil, which is used as fast food by the teenagers.

Material and Methods: Glucometer for measuring of concentration of glucose in the blood, scales for measuring the weight of teenagers students, 100 students (50 boys and 50 girls), foods that contains palm oil. Annually measurement of body weight comparing to the previous weight, and the glucose is tested at the beginning and in the end of the study. Results: The medium body weight of the 100 students at the beginning of the study was 62.12 kg, in 2016 was 65.14 kg, in 2017 71.00 kg and in the end of study 2018 was 74.40 kg. The glucose concentrated in blood at the beginning of the research was 5.2 mmol/l and at the end of the study was 5.9 mmol/. Out of the total of 100 students, at the beginning of the study on 98 students the glucose test showed normal parameters and in 2 students the glucose was in limit

of increasing the concentration in the blood. At the end of the study the glucose test from 100 students to 86 were with normal parameters, to the 12 students was in the limit and to 2 students we had glucose value over the limit.

Conclusion: Our results from this study argue thesis proved and before at scientific experiments, the continuous use (long time) of food which are composed with palm oil can cause increased body weight and appearance of the Para diabetes situation.

Keywords: Obesity, Diabetes, Palm Oil.

INCREASE IN THE TREND OF CAESAREAN BIRTH. ARE PRIMARY CAESAREANS OVERUSED?

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Abstract

Introduction: Sectio Cesarean (SC), is a surgical procedure in which one or more babies are delivered through an incision in the mother's abdomen, performed when vaginal delivery poses a risk to the mother or the fetus. SC on the other hand increases the risks of maternal and newborn health problems and this risk increases with each successive SC. The most common indications for SC delivery are: labor dystocia, fetal distress, fetal malpresentation, multiple pregnancy, suspected fetal macrosomia, previous SC delivery or placental and umbilical cord problems. According to the World Health Organization, the need for cesarean sections continues to grow globally, accounting for 21% of all births. Studies confirm that primary (CS) delivery is a major contributor to (SC) re-delivery in subsequent pregnancies.

Objective: The purpose of this cross-sectional prospective study is to describe the trend of cesarean delivery in Clinical Hospital of Tetovo.

Material and Methods: The study includes all births in the period from June to December 2022 at the Gynecology-Obstetric Department in the Tetovo Clinical Hospital.

Results: Out of a total of 665 deliveries, 264 (39.69 %) were delivered by caesarean section. Of these, 146 were delivered by

primary caesarean section, 99 by second, 13 by third and 6 deliveries by fourth caesarean section.

Conclusion: Childbirth with SC among primiparous women repercuses in increasing the overall rate of cesarean sections. It is recommended to use all possible methods for spontaneous vaginal delivery in primiparous women, thereby reducing potential CS deliveries in subsequent pregnancies.

Keywords: Childbirth, sectio cesarean trend, primary sectio cesarean.

COVID-19 IN NORTH MACEDONIA, ANALYSIS OF CASES, MORBIDITY AND LETHALITY IN DIFFERENT CITIES

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Abstract

The COVID-19 pandemic has had a significant impact on North Macedonia, with various cities experiencing varying levels of cases, deaths, and recoveries. This descriptive paper analyzes data on COVID-19 cases and deaths in different cities of North Macedonia. The data includes total number of cases, morbidity number, number of death cases, cumulative mortality, cumulative lethality percentage, and number of cured cases. Data were obtained from Institute of Public Health of Republic of North Macedonia.

The findings reveal that Skopje, the capital city, has the highest number of cases and deaths, followed by Kumanovo and Bitola. However, when considering morbidity rate and lethality percentage, Tetovo has the highest rates, indicating a higher proportion of cases and deaths compared to its total population.

The research also highlights the number of cured cases, indicating the effectiveness of treatments of each city. The data suggests that some smaller cities have relatively low numbers of cases and deaths, but higher morbidity rates and lethality percentages. This highlights the need for further research into the reasons for these differences.

Overall, this research provides a comprehensive analysis of COVID-19 data in different cities of North Macedonia, shedding light on the variations in cases, deaths, morbidity rates, lethality percentages, and recovery rates. These findings can be used to change public health policies, in order to allocate resources in smaller cities.

Keywords: Covid-19, Pandemic, North Macedonia.

LOW DOSE-ASPIRIN IN PREVENTING FETAL GROWTH RESTRICTION

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Abstract

Introduction: Fetal growth restriction (FGR) is a frequently encountered pathology in obstetrics and affects 5-10% of pregnancies. It is one of the three main causes of perinatal deaths, after premature births and fetal malformations. In approximately one third of cases with FGR, cause or pathology is not found, which makes it difficult to prevent or treat them effectively. Fetuses with normal weight are found in the 50th percentile, while fetuses with FGR are in the 10th percentile. The term SGA (small for gestational age) has to do with constitutional growth rates and the statistical determination within which the newborn is considered smaller for gestational age. Whereas the term FGR (fetal growth restriction) refers to delayed growth below the 10th percentile as a pathological phenomenon, which is based on ultrasound and other diagnostic methods. Mostly, FGR is a consequence of insufficiency of uteroplacental circulation, placental and fetoplacental function. The current management of FGR consists of fetal surveillance to detect a decline in the baby's health and deliver when this can be safely done. Therefore Doppler ultrasound is considered the chosen technique. The use of low-dose aspirin for preventing FGR and preeclampsia (PE) has been one of the most important research topics for the last 10 years. Several national protocols recommend the treatment with low-dose aspirin for high risk pregnancies, starting around 12-16 weeks

of gestation. It favors placentation by its proangiogenic, antithrombotic and anti-inflammatory effects.

Purpose: To estimate the effect of low dose-aspirin started in early pregnancy on the incidence of fetal growth restriction and preeclampsia in women identified as being at risk of preeclampsia. **Methods:** 150 pregnant women at risk of PE had to receive low-dose aspirin (100-150mg) daily. The first group (out of 75 women) began therapy at 12 weeks, while the second group (out of 75 women) began after week 16. Both groups were followed up to term with respective ultrasound and Doppler examinations. **Result:** The reduction of FGR was significant in the group of women who started low dose-aspirin. The increase in mean birth weight was 196g (CI 107-285g) when aspirin was started before 16 weeks of gestation or less compared with 70g (CI 15-124g) when aspirin was started after 16 weeks.

Conclusion: Daily-low dose aspirin initiated before 16 weeks of gestation was associated with a significant decrease in the incidence of preeclampsia, fetal growth restriction and preterm birth in women identified to be at risk for preeclampsia.

Keywords: low-dose aspirin, fetal growth restriction, preeclampsia.

ACADEMIC MOTIVATION OF FIRST-YEAR STUDENTS AND THE INFLUENCE ON THE EVALUATION OF UNIVERSITY STUDIES

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Abstract

The study aims to highlight the impact of academic motivation on the increase of university studies' evaluation, assess how the motivation of students affects the evaluation and accomplishment of the academic process.

The used methodology is based on the collection and processing of data through the Academic Motivation Scale questionnaire. It made possible the testing and gathering of data and information about the evaluation of university based on motivation as an important factor for the realization of university education. Students reflected the situation and expressed their opinions about the academic process and its importance through the questionnaires.

The results of this study demonstrate that students' motivation increases their evaluation for the university and academic process. Students accentuated that university education is an important factor for the improvement of their life. They assessed the opportunities that are provided to them after the completion of university studies in regard to professional development and career.

Students' motivation is an important factor in the assessment of university education. Students value the university education considerably. University education is considered as an opportunity for a better life. It is seen as a chance to become more competent people. Students evaluate university education as a process that affects their personal development.

Keywords: Academic motivation, Influence, Student, University studies.

RELATIONSHIP BETWEEN GLYCATED HEMOGLOBIN LEVEL AND SEVERITY OF CORONARY ARTERY DISEASE IN PATIENTS WITH TYPE II DIABETES UNDERGOING DIAGNOSTIC CORONARY ANGIOGRAPHY

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Abstract

Background: HbA1c (glycated hemoglobin) is often used to monitor blood sugar levels as it is stable and reflects the average sugar level over the previous 3 months. Many studies have proven the correlation between HbA1c and the risk of micro and macrovascular complications. This study aims to assess the possible correlations of HbA1c with the severity of coronary artery disease (CAD) among patients with type 2 diabetes mellitus (T2DM).

Methods: The study included 30 consecutive patients with type T2DM underwent coronary angiography for the evaluation of suspected coronary disease. The participants were divided into two groups according to the level of HbA1c: HbA1c \leq 7% group I and HbA1c $>$ 7% group II.

The CAD severity was quantified by the SYNTAX score algorithm to tertiles: Tertile I, Tertile II and Tertile III (SYNTAX score \leq 8, $>8 - \geq 16$ and > 16 , respectively).

Results: The mean of SYNTAX score value was higher in HbA1c >7% group in comparison with HbA1c ≤ 7% group (19.56 ± 5.876 and 13.71 ± 7.356), ($p=0.044$). There were no statistically significant differences between two groups of HbA1c and mean values of total cholesterol (TC), triglycerides (TR), LDL cholesterol (LDL) and HDL cholesterol (HDL), ($p=0.12, 0.44, 0.19$ and 0.78 respectively). Also there were no statistically significant differences between two groups of HbA1c in relation to gender, smoking, and hypertension. Whereas there were significant positive correlation between HbA1c groups and Syntax score tertiles ($p=0.035$)

Conclusion: This study showed that the level of HbA1c in patients with T2DM is significantly associated with the extent and severity of coronary lesions quantified by SYNTAX score.

Keywords: HbA1c, SYNTAX score, CAD.

BURCH TECHNIQUE IN SURGICAL TREATMENT OF CYSTOCELE ASSOCIATED WITH STRESS URINARY INCONTINENCE

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Abstract

Background: A cystocele is the most common type of female pelvic organ prolapse usually associated with stress urinary incontinence (SUI).

Objective: The objective of this study was to assess the success rate of Burch technique in surgical treatment of cystocele and SUI.

Material and methods: The study was conducted as a prospective open study and included 41 women with cystocele and chief complaint of stress urinary incontinence, in the period between January 2006 and January 2023. The exclusion criteria included neurogenic dysfunction of the bladder due to a brain, spinal cord or nerve problem, bladder tumor and bladder calculosis, history of pelvic radiation and interstitial cystitis. Diagnosis of cystocele was performed by Bonney test, urethrocystogram, explorative cystoscopy and Incontinence Impact Questionnaire. A preoperative protocol was completed before the patients underwent surgery. A total of 41 patients with cystocele and stress urinary incontinence treated with original Burch retropubic urethropexy, without any technical limitations. In follow-up periods of 1, 3 and 6 months, data related to postoperative complications were collected in postoperative protocol. Subjective cure was defined as involuntary loss of urine on all physical activities.

Results: Mean age of the patients with cystocele and SUI was 56.5 years, the mean operative time was 122 minutes, the mean hospital stay was 12 days and the complication rate was relatively low 13.8%. After a mean follow up of 6 months, cystocele recurred in one patient at 1 month. The overall success rate of surgery was 86.2%.

Conclusion: a) Burch urethropexy is a well-accepted procedure for surgical treatment of cystocele associated with SUI due to urethral hypermobility; d) Burch technique represents a versatile, simple, and a single-stage technique with minimal postoperative complications rate and high long-term success rate of 86.2%.

Keywords: Burch technique, cystocele, stress urinary incontinence.

“JJ” URETERAL STENTING AS A PROCEDURE FOR URINARY OBSTRUCTIONS

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Abstract

Background: Ureteral stents are thin flexible tubes that enable urodynamics from the kidneys to the bladder. **Materials and methods:** This study was carried out in the Department of Urologic Surgery, Clinical Hospital of Tetovo and included 46 adult patients, in the period from January 2022 to January 2023. In 38 patients the JJ ureteral stents were placed only in one ureter, while in the other 8 patients stenting with JJ stent was performed in both ureters. Before the patients undergo the intervention, a protocol was completed: laboratory, microbiological and radiological examination, screening of hemostasis.

Results: In all cases (n=46) it was performed without any technical limitations. The overall success rate of ureteral stenting is 93.47%, while in the first group (n=38) unilateral stenting with JJ stent was performed in 36 patients without problem 94.73%. In the second group (n=8), bilateral stenting with JJ stent was performed in 7 patients 87.5%, in one other patient only unilateral stenting was performed.

Conclusions: Based on this study we came to the conclusion: ureteral stenting with JJ stent is an indicative and safe procedure for urinary obstructions, urethral structures, retroperitoneal fibrosis, etc.

Keywords: JJ stent, urinary obstruction.

PULMONARY EMBOLISM WITH PLEURAL EFFUSION IN A PATIENT WITH GRAVE'S DISEASE

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Abstract

Grave's disease is an autoimmune disease of the thyroid gland, clinically presented with thyrotoxicosis, ophthalmopathy and peritibial oedema. As one of the most common causes of hyperthyroidism, it is often presented with positive TSI, and proliferative and circulatory changes in ultrasound images. If left untreated, the complications might be deleterious, including irregular heart rhythm, possible congestive heart failure and coagulopathies. The incidence is 2-3% of the general population. There are documented cases that link high levels of circulating thyroxine with higher incidence of deep vein thrombosis and pulmonary embolism.

We present the case of the pulmonary embolism due to acute exacerbation of Grave's disease treated with antithyroid drugs, 4 years from initial onset. The case report elaborates the possible correlation between a toxic hyperthyroidism and the clinical manifestation of pulmonary embolism accompanied by pleural effusion. The patient was presented with dyspnea, tachycardia, tremor, muscle weakness and weight loss. At time of consultation extensive laboratory findings were ensued, especially serum levels of thyroid hormones, and the dose was corrected accordingly with no visible symptomatic relief. Due to symptom persistence, especially of dyspnea and general weakness, a cardiologic consultation was

performed. The patient was diagnosed with pulmonary embolism and treated accordingly.

Keywords: Case report; Grave's disease, pulmonary embolism, pleural effusion.

INHIBIN A - A PREDICTOR OF PREGNANCY OUTCOME

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Abstract

Background: Analyzing some specific proteins released into the maternal blood circulation give us a very useful data to identify pregnant women that can develop pathological pregnancies. One of those is Inhibin A, synthesizes and excretes during pregnancy from placenta, regulating some hormones that are in relation to embryonal implantation, proliferation and differentiation of trophoblast, placental growth and it' s function, in order to have a healthy fetus.

Objective of this research is to measure the value of serum Inhibin A during the second trimester of pregnancy, and to find the possible correlation with eventual adverse pregnancy outcome.

Method: This study is realized in a Special Hospital for Gynecology and Obstetrics “Mother Theresa”, Skopje, during the period from November 2019 to January 2023. It is a cohort study and includes 890 pregnant women, between 18-22.6 gestational weeks, followed up and monitored till delivery.

Results: From 890 pregnant women, 684 that is 76.8% had no adverse pregnancy outcome and made up the control group, while in 206 that is 23.1% of pregnant women the pregnancy outcome was adverse and they made up the examined group. From examined group, 73 (8.2%) had preeclampsia, 89 (10%) had pregnancy induced hypertension, 21 (2.3%) had fetus small for gestational age, and 23 (2.5%) had intrauterine growth retardation. The biomarker Inhibin A, as a single parameter in second trimester of pregnancy, showed the best results in prediction of adverse pregnancy outcome and it can be used as value to differentiate potential women that can develop some diagnosis that lead to adverse pregnancy outcome!

Keywords: Biomarker Inhibin A, adverse pregnancy outcome.

ISHEMIC HEART DISEASE, THE WAY OF TREATMENT AND ITS TIMING AFFECTS OCCURRING OF COMPLICATIONS AND THE PROGNOSIS OF THE DISEASE

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Abstract

Introduction: Ischemic heart disease (IHD) is a condition defined as not adequate perfusion of the myocardium with blood. In 95% of the cases, it is caused by an atherosclerosis, in other words, because of an obstruction in the coronary arterial circulation. Epidemiologically, ischemic heart disease, has the highest mortality rate in developing countries, than any other disease.

Methods: In diagnostics and therapeutic investigations, which have taken part in the Department of Internal Medicine and Interventional Cardiology Center in Tetovo, methods which have been used during the study are: electrocardiography, echocardiography, stress-echocardiography and angiography.

Results: 148 patients have been involved in the study, 92 of which males while 56 females, which have been observed for one year. With conservative therapy have been treated 62% of them, while with interventional procedures, 38% of the cases. From those treated with conservative therapy, 80.5% have shown complications, 17.5% of the cases have shown complications while 2% have ended lethally. From the cases treated with interventional procedures 96.5% haven't shown

any complications, while 3.5% have shown complications. According to the study, the interventional treatment is more successful.

Conclusion: Percutaneous coronary intervention as a method shows better prognosis at the patients with IHD. The success of the conservative treatment is directly depending on the time of application, meaning the prognosis is better if the patients is treated in the first hours after the first symptoms appear.

Keywords: Ischemic, heart, disease, Ischemic heart disease (IHD).

PREVALENCE OF CHOLELITHIASIS IN THE REGION OF ELBASAN, RISK FACTORS AND THE ROLE OF NURSING CARE

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Abstract

Introduction: Cholelithiasis is a common digestive system pathology, prevalent particularly in developed countries, affecting around 15% of the adult population in the United States. Its incidence has been on the rise in recent years due to the increasing trend in obesity and metabolic syndrome.

Objective: This study aimed to determine the prevalence of gallstone disease in the Elbasan region, analyze various risk factors, and assess the role of nursing care in managing patients with cholelithiasis.

Methods: A retrospective study was conducted at the "Xhaferr Kongoli" Regional Hospital, Elbasan, between January 2020 and December 2022, including all patients diagnosed with cholelithiasis. We analyzed their demographic data, including age, gender, place of residence, body weight, and comorbidities, to assess their influence on the development of gallstones.

Results: Of 172 patients with cholelithiasis, 65 were male (38%) and 107 were female (62%). The youngest patient was 21 years old, and the oldest was 81 years old. The number of cases was highest in 2022, with 45%. 93 patients were living in urban areas, and 79 were living in rural areas. Among our population, females aged 26-50 were the most affected with 46.5%, while males aged 51-70 with 22%.

Comorbidities such as hyperlipidemia, obesity, diabetes mellitus, and hypertension were significant risk factors.

Conclusions: This study's findings revealed that middle-aged women, high body weight, urban residence, and comorbidities are significant risk factors for the formation of gallstones. The highest number of cases was observed in the post-pandemic period, where a sedentary lifestyle may have contributed to the incidence. Nurses play a vital role in the timely diagnosis and appropriate management of patients with cholelithiasis. It is crucial to update their knowledge and skills to provide high-quality care and education to patients with cholelithiasis.

Keywords: Cholelithiasis, prevalence, risk factors, nursing care.

GLOBOZOOSPERMIA. GENETIC DEFECT SUCH AS ACROSOMAL MALFORMATION OF SPERMATOZOA. THE FIRST CASE DISCOVERED IN KOSOVO

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Abstract

Introduction: Teratozoospermia is characterized by the presence of spermatozoa with abnormal morphology in sperm. Globozoospermia is a rare (incidence 0.1%) and severe form of teratozoospermia characterized by the presence in the ejaculate of a large majority of round spermatozoa without acrosome.

Case presentation: History of illness. 22/06/2021 A male patient born in 1984 was reported to the Bioloab-Zafi-F Medical Laboratory from the city of Peja, to perform a spermiogram analysis, referred by a specialist urologist with an indication of primary infertility after 6.5 years of infertility. A diagnosis was made from a urologist's report based on previous analyzes conducted in various clinics and laboratories in Kosovo; Asthenozoospermia and normal morphology.

Results: Total teratospermia 100% (globospermia 89% and other forms of abnormal morphology 11%), necrosospermia 69%, astenozoospermia 21% .

Conclusion: The case presented is the first to be published as a pathology of infertility in the Republic of Kosovo. Teratozoospermia in the form of Globospermis was 89%, and we called it Globospermia severe or Globospermia type III, based on the results of 100% atypical morphology (89% globospermia + 11% other atypical forms) and Necrosospermic 69% as well as asthenzoospermia 21% (mobility; a+b).

Keywords: Globospermia, Teratozoospermia, Necrosospermia, Asthenozoospermia, acrosome.

SCENE SECURITY ASSESSMENT IN THE EVENT OF ACCIDENTAL SITUATIONS

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Abstract

Worldwide, about 16,000 people die each day as a result of injuries (5.8 million deaths per year), and projections for 2020 could see as many as 8.4 million deaths per year. In case of road accidents or accidental situations in mass it is necessary to take steps to secure and document the scene is essential and immediate to provide medical attention DRSABCD. By following these steps, we can help ensure that everyone involved in the accident is treated fairly at the scene, and that potential legal issues are resolved as quickly as possible. The aim of this paper is to reduce morbidity, mortality and disability through BLS, BTLS, PHTLS and ATLS. It is a retrospective study, which analyzes 490 cases for the period January - December 2022. It is important to preserve the evidence at the scene so that it can be used to determine what happened and who may be responsible

Conclusions: Secure the scene, helping to prevent possible risks in further accidents. The emergency plan should be provided, the DRSABCD action plan should be implemented by saving life, treating them stabilized and with medical care, transporting the victims to the nearest hospital. Educate all medical care professionals in the three levels of medical care with the BLS, BTLS, PHTLS and ATLS courses

Keywords: Scene, medical care, BLS, BTLS, PHTLS and ATLS.

PATENT DUCTUS ARTERIOSUS (PDA) IN PRETERM INFANTS (3-YEAR STUDY CONDUCTED AT SUOGJ "KOÇO GLIOZHENI")

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Abstract

Introduction: Patent Ductus Arteriosus (PDA) in preterm infants with significant hemodynamic changes increases the morbidity and mortality of the infant, such as: Ulceronecrotizing enterocolitis, Intraventricular Hemorrhage and Broncopulmonary Displasia; accompanied by a delay in the psychomotor development of babies in preterm infants, especially in low birth weight infants. PDA in preterm infants may be currently the most discussed topic in Neonatology. The increase in incidence of PDA is attributed to the absence of physiological closing mechanisms in preterm babies. Gestational age and birth weight are closely related to PDA incidence in preterm infants. PDA prevalence is inversely proportional with gestational age with a prevalence of 20% at 32 weeks and >90% at 26 weeks of gestational age. Prematurity not only increases the incidence of PDA, but also reduces the possibility of its closure.

Aim: The aim of this study is to shed light on the incidence, treatment and complications of Patent Ductus Arteriosus (PDA) in preterm newborns at NICU, UHOG "Koço Gliozheni", Tirana.

Methodology: The study was conducted at the Neonatology Service, UHOG "Koço Gliozheni", Tirana. The study is retrospective and covers the period January 1, 2020- December 31, 2022. The clinical

records of babies born prematurely (≤ 37 days) who were transferred to NICU for various pathologies related to prematurity were analyzed. Babies born near this maternity hospital and babies transferred from district maternity hospitals are included. In the focus of the study, only babies who were diagnosed with cardiographic examination for the presence of PDA were included.

Results: During this period, about 900 premature babies (gestational age ≤ 37 days) were transferred to NICU, and of these, there are about 300 babies weighing ≤ 1500 g/or gestational age ≤ 32 weeks.

Babies diagnosed with ultrasound for PDA resulted (according to the analysis of medical records) 11 babies weighing ≤ 1500 g/or gestational age ≤ 32 weeks with an incidence of about 3.6%. Compared to the incidence reported by the literature, these findings are very low, indicating an underdiagnosis of this pathology. The treatment is performed only with oral ibuprofen, since this is the only thing offered in our service. In 3 babies we used 2 cycles of treatment, 3 babies did not receive the full treatment as they presented complications during the treatment (oligoanuria and HIV) while in the other babies closure is achieved with one cycle of treatment.

Conclusions: The development of a protocol for the diagnosis, treatment and prevention of complications of PDA in premature infants is very necessary. Offering other alternative treatments (such as in situ surgery) to babies who have contraindications is very important. Echocardiographic evaluation should also be done as soon as possible for babies born extremely prematurely, where the incidence of DBA in this age group is very frequent in order to determine the treatment method.

Keywords: patent ductus arteriosus, premature baby, treatment, newborn's complications.

THE IMPACT OF MYOPIA ON OCT CHANGES IN PATIENTS WITH AND WITHOUT GLAUCOMA

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Abstract

The aim of the paper is to prove the connection between the glaucoma and myopia and to emphasize the importance of myopia in the evaluation of the OCT finding, in patients with and without glaucoma.

Introduction: Glaucoma, one of the leading causes of irreversible blindness in the elderly population worldwide, is a progressive optic neuropathy and is the second leading cause of blindness in the world. Myopia on the other hand is a refractive anomaly, and one of the theories for its occurrence is that the increased intraocular pressure and the reduced resistance of the sclera, act in the direction of increasing the axial length.

Materials and methods: A case-control study was performed, which included patients aged 25 to 70 years. The study was conducted at the Clinic for Eye Diseases in Skopje, in the Glaucoma Cabinet, in the period from 2015-2019.

The study included 100 patients, who were divided into two groups: patients with glaucoma (60) and patients without glaucoma (40). In terms of refraction, they were divided into three groups: low, medium and high myopia. All patients underwent OCT, measuring disc excavation and RNFL.

Conclusion: There is a significant difference between the examined and the control group in terms of: disc excavation and retinal nerve

fiber layer thickness (RNFL). In the Univariate Logistic Regression Analysis for Glaucoma Prediction, significantly associated with glaucoma was OCT / RNFL.

The relationship between the height of myopia and the disc excavation indicated that increasing the height of myopia significantly ($p < 0.05$) increases the damage to the optic nerve.

Keywords: glaucoma, myopia, association, OCT, RNFL, disc excavation.

NEOVASCULAR GLAUCOMA CAUSED BY CENTRAL RETINAL VEIN OCCLUSION – CASE REPORT

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Abstract

Introduction: Rubeosis iridis is defined as neovascularization of the iris characterized by numerous coarse and irregular vessels on the surface and stroma of the iris. These new blood vessels may cover the trabecular meshwork, cause peripheral anterior synechia and give rise to secondary glaucoma. Its most frequent causes are diabetes mellitus and central retinal vein occlusion (CRVO).

Here we report a case of unilateral rubeosis iridis leading to severe neovascular glaucoma following CRVO in a relatively young patient with no major predisposing factors whatsoever. During examination there was detected high intraocular pressure (IOP), redness in the eye and blurred vision. The patient also had pain in the eye. The patient was treated with systemic and local medications.

Conclusion: Rubeosis iridis is a complication of ischemic CRVO, which if not treated in time may lead to neovascular glaucoma (NVG). NVG is a severe form of glaucoma characterized by iris neovascularization, a closed anterior chamber angle, and extremely high intraocular pressures along with severe ocular pain and poor vision.

Cases like these should remind us that CRVO, though a disease of the elderly can occur even in young healthy individuals. Once diagnosed it is essential to have a high index of suspicion for the possible development of neovascular glaucoma because its early diagnosis and treatment can prevent irreversible visual loss.

Keywords: neovascular glaucoma, CRVO, rubeosis iridis,

HIGH MYOPIA AND RISKS DURING NATURAL CHILDBIRTH – CASE PRESENTATION

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Abstract

Myopia or short-sightedness is a condition of the eye where the rays of the sun are refracted in front of the yellow spot or macula lutea. There are several forms of myopia such as: low myopia where the refractive error is up to -3.00, medium myopia -3.00-6.00 and high myopia above -6.00.

The changes of the eye bulb during myopia are increased axial length, changes in the curvature of the cornea and degenerative changes in the fundus of the eye such as peripheral degeneration of the retina or possible retinal ruptures, posterior staphyloma, various pathologies in the RPE and macula.

Diagnostic procedures for the examination and verification of myopia and eventual changes are: keratorefractometry, biomicroscopy, ultrasonography including A-B scan, optical coherent tomography - OCT, fundus photography, etc.

The purpose of our study is to present a control case of a woman patient with high myopia during natural childbirth, including possible risks such as retinal detachment, corpus vitreum ablation, intra and subretinal hemorrhages, various vitreoretinal tractions, etc. The patient is 26 years old woman, first birth without complications during pregnancy, but in the ophthalmological examination she gives data for wearing glasses -6.50d. The gynecologist gives an opinion

for a complete ophthalmological examination, respecting the established protocols. Based on many studies, mainly in the study of the University of Warsaw, there were no contraindications for normal birth and after ophthalmological examinations you were allowed to have a natural birth. After giving birth, the women again underwent an ophthalmological examination and no new changes were observed in the fundus of the eye.

Conclusion: Although patients with high myopia are at risk for complications during physical exertion, natural childbirth has not been proven as a high risk factor, so it cannot be an obstacle or contraindication for this type of procedure. If we find any peripheral retinal rupture, then it is preferable to carry out retinal photocoagulation- LFC before the intervention in order to marginalize the rupture.

Keywords: Myopia, Retina, Cornea, Natural birth.

BLEPHAROPLASTY - OUR EXPERIENCE

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Abstract

Blepharoplasty is a surgical procedure to improve the appearance of the eyelids and may involve removing excess skin, muscle and fat. With the aging process, the eyelids stretch and the muscles that support them weaken, therefore, excess fat may gather above and below the eyelids, causing saggy eyebrows, droopy upper lids and bags under the eyes. As a result of this, the person looks tired and older.

Material and methods - At the University Clinic for plastic and reconstructive surgery, we performed surgical procedures on 45 patients (34 females and 11 males), in the past three years. Upper blepharoplasty was done on 41 patients, and only 4 patients went for blepharoplasty on both, upper and lower, eyelids. The surgical procedure was conducted under local anesthesia. We removed the excess of the skin in the upper eyelids and a small part of adipose tissue in the inferior eyelids. The rest of the fat pedicle was transposed in the upper eyelid to create a fulfilled appearance. In order to lift the eyes outer corner and the middle third of the face, canthopexy was done as well.

Result - The results are best observed by comparing patient's photographs of the eye region taken before and after surgical procedure. We managed to get a mid-face elevation and rejuvenation of the lower eyelid-cheek complex.

Conclusion - As a minimal invasive surgical procedure, blepharoplasty is one of the best procedures to achieve rejuvenation and more youthful appearance in the upper half of the face.

Keywords: BLEPHAROPLASTY, surgery, surgery procedure in face.

EMERGENCY DIAGNOSIS AND TREATMENT OF SUPRAVENTRICULAR TACHYCARDIAS IN CHILDREN-CASE BASED PRESENTATION

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Abstract

SVT occurs when faulty electrical connections in the heart set off a series of early beats in the upper chambers of the heart (atria).

- Types of SVT: There are several types of supraventricular tachycardia:

1. AV reciprocating tachycardia (AVRT)
2. AV node reentry tachycardia (AVNRT)
3. Atrial tachycardia –
4. Atrial flutter, atrial fibrillation
5. Junctional tachycardia

- Clinical picture: In some of the cases SVT could be tolerated well and children can have short episodes of palpitations or chest pain. In smaller children and babies' persistent SVT can lead to heart failure and even collapse.

- Diagnosis: Majority of cases there is a narrow complex tachycardia but could also present as a wide complex tachycardia.

Treatment:

1. Urgent treatment for stopping the episodes of SVT

2. Long Term treatment for preventing episodes or rate control of an SVT

We present 4 cases of neonatal SVT and one case of teenage SVT that had interesting presentations and needed in depth analysis and management.

1. Case 10-day old baby that was admitted to hospital because of increased work of breathing and tachycardia. ECG from the peripheral hospital showed atrial flutter. Was started on Flecainide and B blocker. Transferred to RMCH with own transport for scheduled appointment. Baby presented in cardiogenic shock and VT. Needing urgent DC shock, Baby recovered well 1 year after this episode.

2. Antenatally followed baby with episodes of flutter and AVRT. Born with a heart rate of 170 stable and wide complex tachycardia. Careful analysis showed atrial flutter. DC shock converted to sinus rhythm. Baseline ECG showed WPW. After Holter there was a breakthrough of AVRT tachycardia. Started on Flecainide and Propranolol .6 months after that episode stable no breakthrough tachycardias.

3. Patient had persistent SVT during fetal life with no effect from treatment. Born in good condition in SVT with characteristics of PJRT. Converted with adenosine. Started treatment with propranolol, no breakthrough tachycardia since.

4. A preterm baby born 800 grams was noted to be in SVT but also had NEC which required nil by mouth and surgery for Stoma and was ventilated for 3 months. Very difficult to control narrow complex tachycardia which still has breakthrough episodes despite the baby being nearly one year old on three medications.

5. Patient 16-year-old girl on a very restrictive diet. Presented in A/E with atrial fibrillation. Oral B blocker given converted tachycardia to sinus rhythm. She has Normal investigations, no more arrhythmic episodes.

Conclusion: SVT is an umbrella term for conditions that have different presentations and sometimes need urgent treatment. Knowing the mechanisms of SVT and the different treatment options is of great importance for an urgent but also long-term management.

Keywords: SVT, supraventricular tachycardia, treatment.

CONGENITAL HEART DEFECTS IN NEWBORN

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Abstract

Background: Congenital heart defects are serious malformations that remain to be an important cause of neonatal mortality and morbidity. The clinical presentations are shock, cyanosis, respiratory distress and the failure to recognize these conditions early after birth may lead to acute cardiovascular collapse and death.

AIM: The aim is to determine the prevalence and spectrum of congenital heart diseases among neonates born in our hospital during a five year period (2018- 2022).

Methods: Retrospective study of liveborn data from hospital histories and computer database at the Department of Neonatology at SHGO "Mother Teresa" has been done.

Conclusion: CHD is prevalent in our hospital and there is a need for advocacy to improve access to its diagnosis at birth for appropriate management.

Keywords: congenital heart defects, prevalence, malformation.

SLEEP DISORDERS DURING CHEMOTHERAPY IN CANCER PATIENTS

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Abstract

Introduction: The number of cancer cases is increasing worldwide, thus becoming one of the main causes of death. Chemotherapy, as one of the most common forms of treatment in cancer patients, is associated with many symptoms, among which sleep disorders have a high frequency and affect the quality of sleep.

Aim: It was to evaluate the current literature on sleep disorders and factors related to it among cancer patients during the chemotherapy phase.

Method: Literature search was done in PubMed and CINAHL databases. Through keywords in the English language, studies in the last 10 years have been identified and selected.

Results: Sleep disorders include a variety of symptoms such as difficulty falling asleep, early morning awakening, daytime sleepiness, frequent awakenings, and difficulty returning to sleep. Findings showed a high prevalence of sleep disorders (30%-60%), poor response to treatment, short-term progression and decreased overall survival. Fatigue, pain, anxiety and depression have a significant correlation with sleep disorders.

Discussion: Chemotherapy is accompanied by numerous symptoms, among which sleep disorders are related to the reduction of sleep quality. Early identification of sleep disorders and proper management affect the improvement of sleep quality.

Keywords: cancer, chemotherapy, symptoms, sleep disorders, sleep quality.

NURSING CARE IN PATIENTS WITH EXTERNAL FIXATION

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Abstract

Introduction: External fixation is a surgical treatment used to stabilize bone and soft tissues at a distance from the operative or injury focus. They provide unobstructed access to the relevant skeletal and soft tissue structures for their initial assessment and also for secondary interventions needed to restore bony continuity and a functional soft tissue cover. It is an alternative to internal fixation, where the components used to provide stability are positioned entirely within the patient’s body.

Scope and Purpose: This study aims to determine the importance of nursing care in patients who had used the external fixation. Nursing care is related to the prevention of complications from the use of external fixation, pressures in soft tissues and bone marrow and infection.

Material and Methods: This is a quantitative and analytical study. Information was taken from medical and nursing cards, for a period of 1 year, 2020-2021, in the service of the Trauma and Orthopedic Hospital in Tirana, to determine the importance of nursing care in preventing complications and the progress of rehabilitation of patients with fractures and luxationes.

Results: In the study, 80 patients were included, who had used the external fixation. From the study of these cases it resulted that: With the increase of nursing staff knowledge in the assistance provided to

traumatized patients, 60 of these patients tolerated the external fixation and referred to those that had not suffered any complications from it. 15 of the patients said they had not tolerated the external fixation at first, they said that they had not moved the articulations. 5 of the patients had not tolerated the external traction and had complications, such as constant pain, infection and compartment syndrome.

Conclusions: The main tasks of nursing staff in patients with external fixation are the following: Reducing anxiety, providing comfort, increasing self-care skills and avoiding complications such as: compartment syndrome, infection and non-use syndrome. The patient must correctly understand the purpose of using the external fixation. The information needs to be repeated frequently. Patients are more active in their health care when they have fully understood the therapy.

Keywords: External traction, compartment syndrome, immobilization, self-care.

THE LEVEL OF NURSING COMPETENCE IN DIFFERENT CAREER PERIODS

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Abstract

Introduction: Competence is a skill acquired through learning and experience. Nursing competence is a complex integration of knowledge including professional judgment, skills, values and attitude. Competency assessment should begin during nursing education and continue throughout the nursing career. The level of competence is important for quality assurance in the provision of nursing care.

Aim: It was to provide a review of the current literature regarding the level of competence of nurses at different stages of their career.

Method: For this literature review, scientific publications were searched in MEDLINE, CINAHL and Scopus databases. The search was made with English language terms limited to the last 10 years.

Results: Nurses rated their overall competence as good to very good in 18 studies, and undergraduate students rated their competence lower than average in seven studies. After a one- year educational intervention program, nurses reported an increase in their competency scores. Higher age, educational level, additional training and work experience were also associated with higher competencies.

Discussion: The results of the studies showed differences in the level of competence of nurses at different periods of their career. Competency assessment is needed to provide current knowledge to nursing managers, policy makers, and educators.

Keywords: competence, nursing, nursing student, nurse, professional career.

THE IMPORTANCE OF EARLY RECKOGNITION OF PYODERMA GANGRENOSUM BY GENERAL PHYSICIANS AND SURGEONS – THREE CASES REPORT

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Abstract

INTRODUCTION: Pyoderma gangrenosum is a rare skin disease of uncertain etiology. Immune system dysfunction is generally accused as the responsible mechanism for the occurrence of skin lesions. The diagnosis is one of exclusion.

THREE CASES REPORT: In January 2007, a 43 year old female was admitted because of her worsening general condition and an expanding ulcerative-necrotic skin change in her left thigh. She referred to having had severe sepsis years ago. Upon admission she was treated with antibiotics and consultations were made with doctors from the Infective Clinic and rheumatologists. The patient developed bronchopneumonia and T- 40 °C and her general condition was deteriorating. She was operated and the lesion was removed, leaving the wound open. The biopsy pointed toward pyoderma gangrenosum. After consultations with a dermatologist the patient was given corticosteroids and her health changed radically in a few days. Six months later a 55 years old patient was admitted in our Clinic because of a rapidly expanding ulcerative skin lesion on his right crural region and a previous history of ulcerative colitis. For two weeks he was treated with antibiotics by physicians of his town. Upon his admission in our Clinic was diagnosed with pyoderma gangrenosum. A consultation with a dermatologist was done and corticosteroids

instituted. The effect was fast and spectacular. In November 2008 another 51 year male presented with a large painful ulcerative skin lesion, which was swiftly spreading and had occupied around 60% of his right femoral region. He was treated for more than a month by surgeons with high doses of antibiotics. He had also undergone six séances of treatment in a hyperbaric chamber. Upon admission he was diagnosed with pyoderma gangrenosum and was treated with corticosteroids. There was no expansion of the lesion and his situation improved radically.

DISCUSSION: Pyoderma gangrenosum is a rare disease and it is frequently misdiagnosed by general physicians, surgeons and specialists of other fields. In their early phase, its skin lesions are often considered as infected wounds and treated with antibiotics. The recognition of this condition by non-dermatologists and a joint approach with dermatologists is of paramount importance for its proper treatment.

Keywords: pyoderma gangrenosum, improper treatment, early diagnosis.

TENIASIS AN UNDERESTIMATED PATHOLOGY

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Abstract

Tenia solium and saginata pathogens of chronic diarrhea and neurocisticercosis as a complication in the case of tenia solium. The case at hand presents a 59 years old patient with a twenty year history of symptoms, like intermittent abdominal pain and presence of worms during defecation in length 2-10 cm approximately. During the last month the symptoms worsened, the diarrheal stools were more frequent, with stronger abdominal pain, worms in stool bigger than 10cm, and losing weight more than 15kg even though he had a good appetite. He used to be treated many times during the twenty year period by his family doctor with antiparasitic drug-albendazole, but without any results. We performed a diagnostic microbiological test of feces for parasites and the test resulted positive for parasites and cysts. The patient was admitted in hospital and treated with oral niclosamide 2,0gr and purgative, two hours afterwards, which resulted with active passage of proglotides. The collected material was microscopically examined and proved that the patient was successfully and properly treated, taking into account that the scolex was identified. During the first check up after discharge the patient was feeling much better, he had gained weight, the stools were formed already and the microscopic examination of feces did not identify eggs or cysts.

Keywords: teniasis, chronic diarrhea, neurocisticercosis, niclosamide, purgative.

PREDICTORS OF DIFFICULT LAPAROSCOPIC CHOLECYSTECTOMY – OUR EXPERIENCE

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Abstract

Today, laparoscopic surgery is the gold standard in the treatment of cholecystolithiasis, except in cases where, due to advanced inflammatory processes, gangrenous cholecystitis, fibrotic cholecystitis, cholecystoenteric fistula or dense adhesions at Calot's triangle, it must be converted to open cholecystectomy. However, there are some predictive factors that enable the determination of cases of difficult cholecystolithiasis before surgical intervention.

Aim of the study: the purpose of this study is to evaluate some parameters that seem to be important in the predetermination of difficult laparoscopic cholecystectomies.

Material and methods: The study included 168 patients operated on for cholecystolithiasis in the Clinical Hospital of Tetovo during the period from January 2022 to April 2023. Various laboratory and imaging examinations were performed on the patients before the surgical intervention in order to determine the degree of difficulty during the cholecystectomy.

Results: Of the 168 patients included in the study, 141 (83.4%) were women and 27 (16.6%) men. The age of the operated patients was from 24 to 82 years. Of the 168 patients operated in our clinic, 97 of them underwent laparoscopic cholecystectomy, while the other 71 patients underwent open cholecystectomy. In anamnestic data, the

duration of biliary disturbances from diagnosis to surgical intervention is important because it may influence the difficulty during laparoscopic cholecystectomy. Another important data, especially if the intervention will be performed with laparoscopic techniques, is if the patient has had previous abdominal surgery, this is because of the many adhesions that may be present and that may complicate the surgical intervention. Ultrasonography of the gallbladder and biliary tract is a necessary examination that provides good data on the degree of inflammation and edema of the gallbladder, its adhesions with other nearby structures etc. From the laboratory examinations, the most important are the number of white blood cells, erythrocyte sedimentation rate (ESR), the values of total bilirubin and its two fractions, hepatic enzymes (AST and ALT), CRP, etc. All these data are predictive factors that determine the degree of difficulty during laparoscopic cholecystectomies.

Keywords: Cholecystolithiasis, laparoscopy, predictive, difficult.

LONG-TERM HEALTH CONSEQUENCES IN ADULT AND CHILDREN AFTER COVID-19

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Abstract

The late concerns after coronavirus infection have started to become worrying problems not only for patients but also for health systems everywhere in the world. Recently, there are many studies by many authors about late health concerns after Covid-19 infections, both in the elderly and in children

Aim of the study: In this presentation we will show the symptoms that have been registered in the patients followed by our general practice clinic and who have been infected with the coronavirus since the beginning of the pandemic and until December 2022.

Material and methods: In this study, we included all the patients who were treated in our clinic and who tested positive for Covid-19, confirmed through nasal swabs and serological examinations.

Results: The most common complaints of patients in the post-covid period were dysgeusia, cough, fever, headache, malaise and exhaustion, throat and chest pain, respiratory signs and symptoms, neurological conditions, anxiety and fear, mood and sleep disorders etc. However, these concerns and worries are not as frequent in children as in adults. In our practice, we have had many other patients

with concerns similar to those described above and who have lived together with people diagnosed and treated by Covid, but due to not having a Covid-19 positive test that would verify that they were infected with coronavirus, they were excluded from this study. Most of the patients have been treated in our clinic until they are fully recovered, while a small number of them were sent to other more specialized centers for further assistance depending on their condition. Although the number of children with post-Covid-19 concerns has been noticeably smaller, their treatment has been more complex, due to the fact that most of their concerns have been related to anxiety and fear-related disorders as well as mood disorders.

Conclusion: The consequences of Covid-19 are a common concern for people who have passed it, as well as a great challenge for health professionals. Although these disorders are rarer in children, their treatment at these ages is more complex.

Keywords: Covid-19, sequel, children, adult.

PARASAGITTAL MENINGIOMAS SYMPTOMS

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Abstract

The historical perspective of meningiomas begins in early times since 1614. Felix Plater, Professor Cushing in 1922 and Eisengardt 1938 proposed the term parasagittal meningiomas along with SSS. The purpose of this study is to familiarize ourselves with the experience of Neurosurgery service of Mother Theresa University Hospital TIRANA, by Prof. Mentor Petrela (PU - PH Paris) in the treatment of parasagittal meningiomas as well as our experience in the Tetovo Clinical Hospital although it is very short as well as some cases of meningiomas from the “8 September” General Hospital Skopje. This is a result of the collaborative work performed by the Neurosurgery, Neuroanesthesia - Resuscitation and Neuroradiology team at these three Clinics.

Keywords: symptoms, meningiomas, neurosurgery.

THE MOST IMPORTANT AND HIGHEST IMPACT CHALLENGES FACED BY THE LEADERS OF HEALTHCARE INSTITUTIONS IN THE REPUBLIC OF NORTH MACEDONIA

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Abstract

The healthcare system in general and economic management in health and its development is increasingly attracting the attention of the society. There is a big challenge for Chief Executive Officers – CEOs of healthcare institutions, which connects their need and their requirement to show the top issues, concerns and their pressure regarding the current state of the healthcare system, expectations, plans and predictions for the future.

Chief Executive Officers of the healthcare institutions develop their economical and managerial activities in a dynamic and complex environment with multiple, fast and frequent changes which is expected to be more challenging in the next decade. If they make a better planning of their healthcare activities, achieve to attract and keep qualitative and talented human resources, create a genuine strategy and if they focus and concentrate on the implementation of contemporary technology for creation of new values in new forms, focus on developing new, dynamic and loyal partnerships and on costs reduction then they will be able to face numerous issues, pressures and challenges of this environment and they will confront,

manage and implement efficiently their healthcare activities in the next decade which is meant to be more difficult and more challenging.

Keywords: Economical management in health, healthcare system, management and leadership of healthcare institutions and medical staff, Chief Executive Officers of healthcare institutions, quality of healthcare services.

HEART BLOCK AS A COMPLICATION OF ACUTE MYOCARDIAL INFARCTION

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Abstract

Optimal treatment for acute ST-elevation myocardial infarction (STEMI) within 12 hours after symptom onset includes primary percutaneous coronary intervention (PCI) or thrombolytic therapy. For STEMI patients who present later than 12 hours, current guidelines do not recommend PCI except the presence of hemodynamic or electrical instability or continuing ischemic symptoms. Thus, our intention is to show that early reperfusion may also play a role in the early recovery of AV block that may occur as a complication of myocardial infarction (MI), more commonly inferior MI. A 49 year old patient (male) presented in our department with weakness, dizziness, short-term instability and nausea. The symptoms started one day before admission. The ECG on admission showed a total AV block with a heart rate approximately 33 b/min and ST segment elevation in the inferior leads. Laboratory tests were normal except for an extreme elevated high sensitive troponin. The echo showed normal finding with the exception of the slightly reduced kinetics of the apex, base and mid segment of the lower-posterior wall of the IVS. Coronary angiography was immediately performed, showing 100% stenosis of the rPDA. A stent is placed on the corresponding coronary artery. The total block was present all the time, and following the recommendations, a temporary pacemaker was placed in the patient due to hemodynamic instability and bradycardia. Despite reperfusion, the block persisted 7 days after the

intervention, during which a permanent pacemaker was implanted and the patient was discharged for home treatment. This case highlights the importance and ways of early reperfusion to improve outcomes in patients with STEMI. Early reperfusion may also play a role in the early recovery of AV block that may occur as a complication of MI, more commonly inferior MI.

Keywords: heart block, myocardial infarction, percutaneous coronary intervention.

DIABETIC RETINOPATHY, CLINICAL IMPACT ON PATIENTS' HEALTH AND IN PROFESSIONAL SKILLS

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Abstract

Introduction: Diabetic retinopathy may be defined as the presence and characteristic evolution of typical retinal microvascular lesions, on patients with diabetes. DR usually manifests as a gradual, painless progression of vision loss; however, visual loss may occur with vitreous hemorrhage or macular edema. Aims: To ascertain the prevalence of diabetic retinopathy (DR) based on the duration of the diabetes mellitus (DM) and to compare it with data from relevant literature and other referent clinics. This exploratory research was conducted to evaluate the clinical experience of DR, its impact on other disease and health related quality of life. Material and methods: In this study, focus groups (n = 450) were conducted on patients with diabetes mellitus. The duration of diabetes in the examined patients varied from 5 till 30 years. We have applied examination by ophthalmoscope, slit lamp bio-microscopy with Volk and Goldman lens, optical coherence tomography - OCT as well as fluorescent angiography - FAG. Have included the treated patients with DR, from December 2000 - 2020. Results: Participants described a range of evaluated symptoms and clinical impact. In suffering for a period of 5 years, the prevalence of DR is 12,5%. In diabetic patients suffering over 30 years, the prevalence of DR is over 90,5 %. After the test of PDR impacted the complications results by the X2 -test, the

difference was found to be statistically significant for $p > 0.05$.
Conclusion: Diabetic retinopathy, undertakes a multidisciplinary approach in all patients with diabetes. Always should be assessed visual acuity, the loss of independence and mobility associated with decreased visual functioning based on NPDR and PDR associated with visual impairment have a significant impact on health related quality of life in patients with DR.

Keywords: DR, visual acuity, health related quality of occupation.

VIOLENCE AND AGGRESSION IN NURSING STAFF: A SYSTEMATIC REVIEW

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Abstract

Workplace violence (WPV) is considered one of the main health care problems, whose prevalence varies from 50 to 80% among health care professionals. According to the WHO, workplace violence is classified into two types: physical violence and psychological violence. In addition to providing quality services, nurses are also in close contact with patients and their relatives, which endangers their safety in the hospital. The purpose of this study is to identify the impact of violence and aggression on the performance of the nursing staff. The methodology used consists of reviewing articles published in PubMed, PsycINFO, and CINAHL using keywords such as violence, aggression, nurses, medical personnel, and performance. The results of international reports show that violence and aggression have a negative impact on the work performance of nurses, causing a decrease in productivity in health care, a decrease in the level of job satisfaction and organizational commitment, the desire to leave the workplace, and an increase in the level of stress that negatively affects the quality of patient care. Increased exposure to workplace violence will be accompanied by increased fear, anxiety, and stress, which directly affect the quality of life of the nurse, resulting in various physical or psychological manifestations of the disease. Nurses should be educated about hospital policies and encouraged to report any situations of violence.

Keywords: violence, aggression, nurses, medical personnel, performance.

EFFECTIVENESS OF WORKSHOPS IN MEDICAL EDUCATION FOR STUDENTS

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Abstract

Workshops in education play an important role in enabling, experiencing and dealing with practical things. They offer training in up to date issues concerning the health system, technological development and recent epidemiological changes in the rise of specific disease entities. In particular workshops have a special role in medicine and offer an opportunity to stay updated with the latest developments in medicine and health care.

In this study we aimed to perform research on the current state of basic and clinical courses for medical students in the University of Tetovo, North Macedonia. The study was conducted using a research methodology and reliable sources were found from primary sources, from a workshop in the Radiology field for medical students in March 2023 and from a questionnaire made in April 2023. We collected and interpreted the data from medical students who have been participants in different workshops. Medical degree programmes have to be able to provide workshops through their accredited system, where students will be able to get the updated education in specific medical topics. The University of Tetovo has continuously supported various workshops through different organizations. Nevertheless, in our opinion there has to be an official body that grants ECTS to these workshops.

Keywords: Continued Medical Education, Medical workshops, Professional development.

FACIAL INJURIES CAUSED BY SEVERE TRAUMA AND ITS CHALLENGING OPTIONS FOR RECONSTRUCTION: A CASE REPORT

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Abstract

Traumatic facial soft tissue injuries are commonly encountered in the emergency department by plastic surgeons. Unfortunately, facial injuries frequently occur, especially in car accidents. The eyelids are one of the many facial structures that might be injured and are a special difficulty to repair. The treatment of these injuries can be complex and may have significant impact on the patient's facial function and aesthetics. The fragile structure of the eyelids makes their reconstruction a particularly challenging operation since complications and contractures are frequent following surgery. In this case report we have presented a successful plastic surgery management of a 36-year-old patient who sustained injuries to his left facial region and nose following a motorcycle accident. The patient was initially evaluated in the emergency department and found to have no other trauma besides his facial injuries. A comprehensive examination was performed upon admission to our plastic and reconstructive surgery clinic. It was noted a deep injury of his left upper eyelid, a multifragmentary fracture of his nose with an open wound, big lacerocontuse wound of his left facial region and his upper lip. The patient was suspected of having a corneal rupture, which an ophthalmologist promptly evaluated and treated. The

patient underwent surgical intervention for his wounds, nose, and left upper eyelid at our university clinic for plastic and reconstructive surgery. 12 days after his initial surgery, the patient experienced upper eyelid contracture and fibrosis, leading to malfunctioning blinking. After three weeks, subsequent adhesiolysis and reconstruction techniques were used, resulting in positive outcomes. This case highlights the importance of comprehensive evaluation and management of patients with facial trauma, particularly those at risk for complications such as upper eyelid contracture and fibrosis. Our successful approach to reconstruction of the upper eyelid may serve as a valuable resource for other plastic surgeons managing similar cases.

Keywords: facial injuries, eyelid reconstruction, skin grafting.

ASSESSING SECULAR TREND IN PUBERTY TIMING AMONG GIRLS

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Abstract

Secular trends in puberty refer to the changes observed over time in the onset and progression of puberty in populations. One of the most notable secular trends in recent years has been the declining age of puberty timing, particularly the declining age of menarche among girls. The aim of this study was to investigate the secular trend in puberty among girls, comparing four ethnicities in the southwestern part of North Macedonia. An assessment of puberty stages was conducted, which included the evaluation of secondary sexual characteristics of 480 sampled girls aged 6-13 years from four different ethnicities between February and April 2022.

Results: The prevalence of breast development stages according to age shows that B2 increased gradually from 2.6% at 6+ years to 8.0% at 7+, 13.5% at 8+, and 30.6% at 9+. At the same time, the prevalence of P2 pubic hair and AH2 axillary hair was 1.1% at 7 years. The mean age of reaching breast development stage B2 in the entire sample of girls was 9.38 +/- 1.3 years, of stage P2 was 9.93±1.36 years, while for stage AH2, it was 11.01±1.4 years. Out of a total of 480 girls, menarche was reported in 93 girls (19.4%). The average age for the first occurrence of menarche in all girls was 10.97±1.16 years. In comparison with ethnicities, the lowest average age was registered among Roma girls, followed by Turkish, Macedonian, and with the highest age among Albanian ethnic groups.

Conclusion: The prevalence of stage B2 breast development at 6 and 7 years, as well as the prevalence of P2 pubic hair and AH2 axillary hair at 7 years, is worth emphasizing because the occurrence of secondary sexual characteristics before the age of 8 may indicate a possible sign of early onset of puberty. Also, the declining average age of first menarche at 10.97 ± 1.16 years, compared to our studies, European, and global research, conforms to the secular trends of earlier pubertal maturation in our study.

Keywords: puberty, breast development, menarche, secular trends.

POSTOPERATIVE REFRACTIVE OUTCOME AND PATIENT SATISFACTION AFTER MULTIFOCAL LENS IMPLANTATION

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Abstract

Objective: To compare and evaluate refractive results and patient satisfaction after trifocal IOL implantation in comparison with quadrifocal and monofocal lenses **Design:** Prospective, by availability, case series.

Material and methods: The study included 13 patients (17 eyes) who underwent cataract surgery with phacoemulsification. The patients were divided into 3 groups: Group 1 (6 eyes) had the trifocal IOL implanted; Group 2 (6 eyes) had the quadrifocal IOL implanted; Group 3 (5 eyes) which is the control group with a monofocal lens was implanted.

Results: The average values of the manifest refraction of the diopter sphere, 6 months after the operation, in the first group were -0.3 ± 0.2 , in the second -0.1 ± 0.2 and in the third -0.05 ± 0.4 . The spherical equivalent is within the range of ± 0.4 D in all eyes 6 months postoperatively. While the average values of the manifest refraction-diopter cylinder, 6 months after surgery, in the first group were -0.3 ± 0.2 , in the second -0.7 ± 0.2 and in the third -0.5 ± 0.4 . There are no significant differences in patient satisfaction rates between the three groups.

Conclusion: The data suggest that the average values of manifest refraction diopter sphere and cylinder postoperatively are similar between the whole groups. Patient satisfaction is quite high in the entire group.

Keywords: refraction, multifocal and monofocal IOL, phacoemulsification, patient satisfaction.

MANAGING ESSENTIAL HYPERTENSION AND DYSLIPIDEMIA IN CORONARY ARTERY DISEASE: A CASE REPORT

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Abstract

Essential hypertension and dyslipidemia are both well-known risk factors for cardiovascular disease, including coronary artery disease. The clinical case report discusses the relationship between essential hypertension and dyslipidemia as coronary risk factors. This study examines the ways in which these risk factors can lead to coronary artery disease and the mechanisms by which they may interact to increase the risk of cardiovascular events. Additionally, the study highlights strategies for managing coronary artery disease, especially in a pharmaceutical aspect. The clinical case study includes description of statins as HMG-CoA reductase inhibitors as a part of the pharmacological strategy in the management of coronary artery disease. The results show a significant decrease in lipid status when the patient was put in an antilipemic and antihypertensive therapy. The ultimate goal of this clinical case study is to increase awareness of the significant role that hypertension and dyslipidemia play in the development of coronary artery disease.

Keywords: Coronary artery disease, Dyslipidemia, Essential hypertension, Statins, Clinical case report.

DIAGNOSTIC APPROACH IN PATIENT WITH ABDOMINAL AORTIC ANEURYSM – CASE REPORT

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Abstract

Abdominal aortic aneurysm is a specific medical condition related to enlargement of the aortic diameter more than 55 mm with rapid progression in the abdominal portion. Patients with AAA have risk for rupture and aortic dissection with high mortality and morbidity rate. AAA can be asymptomatic, patients may have abdominal discomfort, one of the symptoms is pulsatile aorta during abdominal examination. Treatment goal is to correct the aneurism via endovascular or surgical approach to reduce risk of mortality. In our department in the Clinical Hospital of Tetovo, a patient was admitted with abdominal discomfort and pulsatile aorta during examination. The first approach was to perform echocardiography with Doppler ultrasound of the aorta which shows dilatation of abdominal aorta. The computed tomography with angiography was performed and infrarenal fusiform aneurysm of the aorta was seen with dimension max 75mm. length of the dilated part is 140 mm with intraluminal thrombus. According to the previous results the patient was indicated for operative treatment and transferred to the vascular surgery department. The correction was performed with implantation of aortic graft. The patient was stable during the post interventional period and was discharged home. Symptom improvement was confirmed within the next examination. Follow up examinations show relief of symptoms.

Keywords: aortic aneurysm, aortic graft.

THE ROLE OF THE BALANCE BETWEEN ANTIOXIDANTS AND FREE RADICALS IN THE BODY

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Abstract

Antioxidants are substances that protect our body from free radical damage. Antioxidant is a defense system that includes endogenous and exogenous components, which have an important role in removing free radicals. Antioxidant systems in the body during increased ROS production work to minimize the disturbance created in the cell. Free radicals are derivatives of free radical species (ROS) that are produced by normal cell functions. Free radicals act on proteins causing the processes of gene mutations and genetic carcinomas. ROS include hydroxyl radicals, superoxide radicals, unpaired oxygen, nitric oxide radicals, lipid peroxides.

In this abstract, I seek to point out the importance of the balance of antioxidants and free radicals in the body and the consequences that result from the disruption of this balance.

Keywords: Antioxidant, free radicals, balance, organism.

A CASE REPORT OF A SUBACUTE CUTANEOUS LUPUS ERYTHEMATOSUS AFTER TREATMENT WITH RITUXIMAB.COINCIDENCE

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Abstract

A 59-year women with a seropositive rheumatoid arthritis (RA) developed erythemasquamous lesions on her upper back, chest, face and hands. The clinical, histological and immunological findings confirmed the diagnosis of Subacute Cutaneous Lupus Erythematosus (SCLE). (SCLE) is a subtype of cutaneous lupus erythematosus. It presents as a widespread non-scarring photosensitive rash. It can be associated with other diseases, including Sjögren syndrome, rheumatoid arthritis (RA), Crohn disease, also it can be induced by different medications.

Aim of our case report is to consider the diagnosis of SCLE even in older patients, especially when the patient develops new dermatologic findings with photo distribution after starting a new medication. The patient, age 59, was diagnosed two years ago with rheumatoid arthritis and treated with sulfasalazine, chloroquine phosphate, azathioprine, cyclosporine with no positive results. Due to the resistance of the conventional therapy and exacerbation of the disease, Rituximab was initiated in November 2022, followed by methotrexate tablets 15 mg/weekly in December. In February disseminated erythematous livid annular and polycyclic lesions that appear on the face, lower and upper extremities, chest and the upper back. The blood test showed anemia with high CRP-94. The

immunological investigation showed: Rf- 106.9IU/,ANA Hep2(IFA)- Anti-CCP-47.7U/ml, AntiSSA/Ro-70.5U/ml, AntiSSB/La, anti ds DNA and ANA were negative. . Results of skin biopsy are in addition to SCLE or other systemic disease. The patient was hospitalized and treated in our clinic with prednisolone 0.5 mg/kg and antimalaric therapy.

The diagnosis of Subacute Cutaneous Lupus Erythematosus (SCLE) can be especially challenging in patients taking multiple medications but can be clinically suspected when it develops after initiation of a new drug. Prompt diagnosis is critical as continued use of the culprit medication can result in worsening cutaneous manifestations. Although Rituximab is considered as treatment in resistant cases of Cutaneous lupus , we report the first case, to our knowledge , Subacute Cutaneous Lupus Erythematosus (SCLE) after treatment with Rituximab.

Keywords: Rhupus syndrome, biological therapy, covid-19, vaccination, autoimmune.

BREAST CANCER THERAPY AND NOVEL NANOPARTICLE-BASED DRUG DELIVERY SYSTEMS

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Abstract

Breast cancer patients, drug resistance is the major cause of drug treatment failure. Chemotherapy, as the dominant approach, is the mostly used treatment modality nowadays. Classical breast cancer drugs are still widely used however, they are being replaced by nanoparticle encapsulation as new drug delivery systems, due to their high toxicity. Nanoparticle drug delivery systems have a vast contribution to chemotherapy approach nowadays. Contemporary cancer treatment studies are progressively being focused more on newly designed drug formulations, which exhibit lower toxicity in normal tissues, and higher specificity in targeting tumor tissues. Novel drug delivery systems are adapted either for delivery of existing or newly designed anti-cancer agents. They come in various sizes, shapes, different encapsulating complexes and diverse drug loading efficiencies. Such drug designs are showing reduced resistivity of cancer cells to chemotherapeutic agents, thus increasing the treatment efficiencies. In addition, they are delivering drugs within the tumor microenvironment, often with cancer cell-specific receptors. Some nanoparticle drugs are also now being used for imaging purposes. Herein, we summarize different anti-cancer drug modalities and scientific findings acquired both from in vitro or in vivo studies, with a focus on breast cancer chemotherapeutic agents. *Keywords:* breast cancer, chemotherapy, topoisomerase inhibitors, drug delivery, nanoparticles.

A STATISTICAL REVIEW OF BLOOD DONATION FREQUENCY DURING THE PRE LOCKDOWN PERIOD, THE LOCKDOWN AND AFTER THE LOCKDOWN PERIOD IN THE TRANSFUSION INSTITUTE OF TETOVO, NORTH MACEDONIA

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Abstract

Blood donation has remained a challenge in developing countries, like North Macedonia. We decided to analyze the statistical data from the blood transfusion institute in Tetovo during the pre lockdown period (2015-2020), during the lockdown (2020-2021) and post lockdown period (2022) and see how the lockdown affected the blood donations in this region. Data from in-service and out-of-service blood donation diaries were used, derived from the service of the institute of transfusion medicine in Tetovo, as well as questionnaires that provide a reliable anamnesis for the recruitment of blood donors. Part of this study were 15935 blood donors. Data were collected from January 1st, 2015 to December 31st, 2022. The frequency of the results of the data derived from the research was calculated with Microsoft Excel version 2019. From the obtained results the recent

study shows an increased wave of donors starting in times of the pandemic with Covid-19 in contrary to the pre-lockdown years 2015-2019. However the results show an unchanged percentage of the female blood donors, which was lower than the one of male donors. In conclusion, there is a need to adopt innovative ideas, as well as to employ advocacy and novel campaigns to increase the trend towards blood donation in Tetovo, North Macedonia.

Keywords: Transfusion, blood donation, pandemic, management.

ANTENATAL DIAGNOSTICS AS A METHOD FOR REDUCING CONGENITAL ANOMALIES IN THE TETOVO REGION

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Abstract

INTRODUCTION: The form and function of the human organism, although similar for the entire species, vary to certain limits during ontogenetic (morphological) development. Pathological genes are not only those that have changed qualitatively, but also all those that in any way disturb the harmony of a genotype. The World Health Organization from 1969, according to which “congenital anomaly means any anatomical anomaly of development, visible with naked eye during the clinical examination of the child or during the autopsy of a dead child, which is present at birth or is observed during the child’s stay in the hospital in the first days after birth.

OBJECTIVE: The aim of the paper is to prove the impact of prenatal diagnostic methods in reducing congenital malformations in newborns in the region of Tetovo.

MATERIAL AND METHODS: The study is prospective, carried out in the Department of Obstetrics - Neonatology at the Clinical Hospital Tetovo, in the period January 2021- December 2022, there were included all births for the year 2021, a total of 1326, and 1011 births in 2022. Prenatal diagnosis was carried out in the obstetrics clinic at Clinical Hospital Tetovo, Clinical Laboratory Clinical Hospital Tetovo, GAK Skopje, SHGA-Chair Skopje, with the following

Methods: Priska 1, Priska 2, Amniocentesis, ECHO at 20 weeks of pregnancy, chorion biopsy.

RESULTS: In 2021, out of a total of 1326 births with anomalies, 3 (0.22%) newborns resulted (cardiomyopathy, Sy Down, retinopathy), in 2022, out of a total of 1101 newborns with congenital anomalies, 4 (0.36%) newborns resulted (Palatoschisis, cardiomyopathy, omphalocele, dysmorphia)

CONCLUSION: As a result of prenatal care we have a small percentage of congenital anomalies compared to previous years when prenatal diagnosis was much more difficult, of course there is an increased number of abortions.

Keywords: Perinatal skringing, kongenital anomaly.

THE NURSES' EXPERIENCE DURING LOOKING AFTER THE PATIENTS WITH COVID-19

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Abstract

The disease Coronavirus 2019(COVID -19) is an infectious disease caused by the severe syndrome of respiratory acute Coronavirus 2 (SARS- COV-2). The normal symptoms include fever, cough and shortness of breath whereas muscular pain, saliva production and sore throat are less usual symptoms. Most cases result in mild symptoms and some transform into pneumonia. Death rates for diagnosed cases vary from 1-5%, but vary according to age and other health conditions. COVID-19 put the nurse personnel in front of the war in the intensive care unit (ICU). International witnesses show that nurses experienced psycho- emotional and physical overload as a result of caring for these patients.

THE PURPOSE: The purpose of this study is to examine the experience of the nurse personnel during looking after patients with COVID-19 in ICU.

METHODS: This is a quality descriptive study. In this study a nominative sample with 13 nurses who participated in a self structured survey. The surveys were coded.

RESULTS: The experiences between the nurses of the intensive care who looked after the patients diagnosed with COVID-19 were divided in some categories. The emotions experienced were sub categorized in anxiety/ stress, fear, impotence, worry and sensitivity. The physical symptoms were sub categorized in sleep disorder,

headache, discomfort, exhaustion, and shortness of breath. The challenges of the environment of care were sub categorized in: inability to offer human consoling support, dying patients, personal protective equipment (PPE), isolation, lateness in cure, change of the guidelines of the practice. The social effects were sub categorized in stigma, divergent perception of the hero of the health care, tensed interactions and isolation. The short term strategies of coping were divided in: support of the coworkers, disorientation, distraction, family support, mental, spiritual and body wellbeing.

CONCLUSION: The nurses of the intensive care have experienced psychological and physical overload as a result of looking after the patients diagnosed with COVID -19 in a challenging environment. Out of the work, the nurses experienced social changes caused by the pandemics and with various perceptions about them.

Keywords: COVID-19: Nurses' experiences; quality research.

EPIDEMIOLOGY, CHARACTERISTICS AND RESULTS OF CHILDREN WITH COVID-19 IN ELBASAN REGIONAL HOSPITAL

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Abstract

Introduction. Covid-19 (SARS-CoV-2) has circulated in many countries of the world, characterized by incubation period, considerable variability, infectivity and high population susceptibility and various methods of transmission. Clinical manifestations of COVID-19 in children are mild or asymptomatic infections. Often they are carriers and transmitters of the virus. In addition, some children will exhibit a high inflammatory response and experience serious complications such as multisystem inflammatory syndrome in children (MIS-C).

Purpose - Research of COVID-19 in children based on epidemiological features, variant mutations, clinical manifestations, auxilliary examinations and treatment of children with COVID-19.

Methodology - Retrospective study of children <14 years old with laboratory-confirmed COVID- 19 and admitted to pediatric service, January-February 2021.

Results - In total, 37 children <14 years old were admitted to pediatric service (January - December 2021). 25 (68%) children were admitted with COVID-19 without complications, 9 (24%) with pneumonia and 3 (8%) with multisystem inflammatory syndrome. Infants counted for 24% of cases (9/37), approximately half of whom (5/9, 55%) were <2

months old. Fever was the most common symptom (40.5%), followed by respiratory symptoms (32.5%) and gastrointestinal symptoms (27%). 14 (38%) children had associated pathologies such as: sickle cell disease (14.2%), chronic respiratory disease (7.1%) and severe neurological impairment (7.1%). Decreased erythrocyte count, increased inflammatory markers, and anemia were independently associated with admission to intensive care.

Conclusion - Most children admitted to the pediatric ward with COVID-19 have a smooth decourse and positive results. MIS-C is a serious complication of COVID-19 which can affect children and can be misdiagnosed initially as acute appendicitis. Reduced erythrocyte count, elevated CRP, and anemia are independently associated with critical cases of COVID-19 in children.

Keywords: COVID-19, children, mutation, clinical manifestations, syndrome, treatment.

AORTIC DISSECTION IN 26 YEARS OLD MALE WITH BICUSPID AORTIC VALVE ASSOCIATED ANEURYSM: CASE REPORT

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Abstract

Aortic dissection is a very dangerous, fatal and emergency condition which requires immediate surgical intervention. It mainly affects patients after 50 years old, and is very unusual in younger patients. It has been traditionally associated with other pathological conditions such as: trauma, Marfan syndrome, Ehlers-Danlos syndrome, bicuspid aortic valve and pregnancy. The patient is a 26-year-old male who was presented in the emergency department with acute chest pain, epigastric discomfort and nausea. ECG showed sinus tachycardia (110 bpm) other findings were normal. Cardiac ultrasound showed an ascending aortic aneurysm at 6 cm, a possible presence of an intimal tear in the ascending aorta as well and a suspect bicuspid aortic valve with moderate aortic regurgitation. The diagnosis of acute aortic dissection type A (De Baake I) was confirmed with CT angiography of the chest. The patient was admitted to another hospital where he was emergently operated with simultaneous replacement of the aortic valve and ascending aorta with a composite and he had a satisfactory clinical course. Acute aortic dissection in young adults is a very rare condition. The disease may be easily misdiagnosed for other cardiac, muscular, neurological,

esophageal or renal diseases. The presence of bicuspid aortic valves is associated with dilatation of proximal aorta increasing their risk of aortic dissection 8 -fold. Prompt surgical intervention with replacement of the affected part of the aorta offers a survival benefit for the patient.

Keywords: aortic dissection, bicuspid aortic valve, cardiac ultrasound, computed tomography angiography.

THE IMPORTANCE OF APPLYING AN EXTERNAL FIXATIVE TO GUN INJURIES EXTENDED

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Abstract

The incidence of gunshot wounds has increased significantly in our country, especially after 1997. Gun injuries have lasted, albeit with low kinetic energy, destroying soft tissue and should be treated as closed fractures. If the injury has caused unstable fractures, they should be treated through internal stabilization, while stable fractures should be treated through functional support.

Purpose: The purpose of this study is to underline the importance of using an external fixative in extensor arms injuries as well as enhancing the quality of treatment for these patients.

Methodology: Our study is retrospective and covers the period January 2017 to June 2022. We have studied 43 patients with fractures caused by prolonged arms of general therapy. Of these patients were: males 32-81%; Boys (under 18 years old) 3-7%; females 8-19%. Age: maximum 67 years old; minimum 5 years old; average 31 years old. Female / male ratio 1; 4.34.

Conclusions:

1. In all the cases presented, biological bone fusion was achieved for a maximum period of 12 months.
2. The use of external fixative in the treatment of these patients was necessary and was seen as the best possible treatment.
3. It is also important to treat the wounds and use appropriate therapy to improve the patient's health as quickly as possible.

Recommendations:

1. The treatment of open fractures in wounds with elongated arms is complex and requires the cooperation of all medical personnel.
2. Use of external fixator provides optimal solution for immobilization of fracture and fast start of osteosynthesis process.
3. Wound healing and the application of adequate therapy are the basic conditions for the fastest healing of the patient.

Keywords: open fracture, wound, elongated arms, external fixator, osteosynthesis.

ROLE OF OXIDATIVE STRESS AND ANTIOXIDANT SUPPLEMENTATION IN PREECLAMPSIA: A LITERATURE REVIEW

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Abstract

Preeclampsia diagnosed during pregnancy is a multisystem progressive disorder characterized by the new onset of hypertension and proteinuria or the new onset of hypertension plus significant end-organ dysfunction with or without proteinuria, typically presenting after 20 weeks of gestation or postpartum. This disorder is associated with a significant risk of maternal and fetal morbidity and mortality and includes 2 to 8% of pregnancy-related complications, greater than 50,000 maternal deaths, and over 500,000 fetal deaths worldwide.

This is a literature review based on both clinical and basic science research using electronic databases PubMed, Google Scholar, Elsevier, ResearchGate and ScienceDirect, with the focus on the role of oxidative stress in preeclampsia, taking into consideration various aspects of oxidative damage to placental structures, leading to massive dysfunction of the maternal vascular endothelium due to higher levels of reactive oxygen species, which can cause indiscriminate damage to biological molecules, loss of function and even cell death, as well as antioxidants, which tend to be overpowered in preeclamptic pregnancy.

Biomarkers of oxidative stress that have been used to identify preeclampsia are malondialdehyde, lipid peroxide, advanced protein oxidation products, carbonyl protein, 8-hydroxy-2'-deoxyguanosine, total oxidant status, hydrogen peroxide, nitric oxide, superoxide dismutase, catalase, glutathione peroxidase, glutathione-S-transferase, free glutathione and total antioxidant capacity.

Antioxidant supplements have been proposed as a possible prevention and this literature review focuses on the latest evidence, exploring the efficiency of antioxidants in prevention of preeclampsia.

Keywords: Preeclampsia, oxidative stress, reactive oxygen species, biomarkers, antioxidants.

COLON ADENOCARCINOMA WITH SQUAMOUS DIFFERENTIATION: CASE REPORT

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Abstract

Objective: Adenosquamous carcinoma of the colon is an colon neoplasm composed of separate malignant squamous and glandular components. This rare subtype has an incidence of < 0.1% and features of both adenocarcinoma and squamous cell carcinoma, similar to adenosquamous carcinomas seen elsewhere in the gastrointestinal tract.

Case report: We report a case of a 43 year old female patient who was diagnosed with colon cancer after colonoscopic examination with biopsy . The patient underwent left colon resection (sigmoid colon) and the specimen was sent to histopathologic department. After gross dissection was revealed an obstructive polypoid and ulcerative mass with 5.6x5.2 cm, with an invasion in fat tissue and with serosal perforation. Histopathological views from tissue specimens showed an admixture of distinct components of both adenocarcinoma and squamous cell carcinoma approximative 10 % of total tumor mass).

Discussion: Herxheimer reported the first instance of colorectal adenosquamous carcinoma in 1907, describing it as a tumor with elements of both adenocarcinoma and squamous cell carcinoma. Other potential causes of epidermoid carcinoma that develop in the large intestine must be ruled out in order to make the diagnosis of primary colorectal adenosquamous carcinoma.

Keywords: colon cancer, adenocarcinoma, squamous cell differentiation.

SAFE READING OF ECG IN CHILDHOOD WITH COMBINED UTILIZATION OF ARRHYTHMIA TRAINING AND WEB BASED APPLICATIONS

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Abstract

Introduction: Owing to the dynamic nature of pediatric patients, 12 lead ECG undergoes maturation related physiological changes throughout childhood. These changes lead to unnecessary anxiety in medical professionals which in turn further exacerbates potential mistakes or oversight in the reading of ECG in acute scenarios and routine pediatric practice. This talk will deliberate on the most notable and important electrocardiographic changes in children and their normal limits in different stages of childhood.

Discussion: The heart rate on an ECG is the main parameter that undergoes steady changes from birth to adolescence then it stays fairly constant between 60 and 100 beats per minute (bpm). Infancy makes the tachycardia definition rather challenging below the heart rates of 200bpm. In addition, the differentiation of sinus tachycardia from a genuine SVT gets difficult as the heart rate increases between 10-20 bpm for each degree temperature rise in a febrile child. Second important changes occur in the precordial T wave polarity from the day one to 16 years of age. T waves are positive in all precordial leads at birth. From the day 3 onwards T waves flip to negative polarity from V1 to V4 but never in leads V5-6. Hence, if the negative T waves extend to the leads V5-V6, the diagnosis of myo-pericardial abnormality must always be entertained. PR interval, duration and amplitude of QRS also extend gradually as the myocardial mass

grows bulkier and more mature. Therefore, the definitions of prolonged PR interval, wide complex QRS, and bundle branch blocks all change every 4-5 years up until age 12 - 14. Relatively faster heart rates in infants and toddlers renders Bazett's formula less reliable in the correct diagnosis of the long QT syndrome. Memory alone may not be sufficient for general pediatricians and non-electrophysiologist to recognise these specific ECG patterns hence utilization of web applications may aid safe and correct interpretation of pediatric electrocardiogram in clinical scenarios.

Conclusion: Utilization of ECG calculators and algorithms in medical apps combined with basic understanding of maturational changes in children can facilitate correct diagnosis of ECG abnormalities, and improve differentiation of normal ECG from abnormal ones in pediatric practice.

RETINAL ARTERY OCCLUSION

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Abstract

Background: Retinal artery occlusion is an ophthalmic emergency that requires immediate evaluation and transfer to a stroke center. It is an obstruction of retinal blood flow that may be due to an embolus causing occlusion or thrombus formation, vasculitis causing retinal vasculature inflammation, traumatic vessel wall damage, or spasm. The risk factors and demographics of retinal artery occlusion are similar to ischemic stroke and include several modifiable risk factors: Older age, Male gender, Smoking, Hypertension, Obesity, Diabetes, Hyperlipidemia, Cardiovascular disease, Coagulopathy

Case Report: a 43-year-old patient presented to the clinic with vision in the right eye L-P- while the left eye 1.0 s.c. From the anamnestic data, it shows that 7 days ago he performed radiological-invasive Coiling intervention as a result of several brain artery aneurysms. From the examinations carried out in the ophthalmology clinic: the tone was normal 12.2 mmHg and the fundus of the eye was checked with dilated pupils. In the examination of the fundus of the eye (ophthalmoscopy) in the biomicroscope with the help of the 90d lens, the ischemic retina was verified as a result of hypoperfusion and the cherry red spot, which is a typical sign of occlusion of the central retinal artery. Also the color of the retina was faded to white. From other non-invasive examinations, we performed fundus photography, OCT (optical coherence tomography) and FA. From all those examinations, CRAO (Central retinal artery occlusion) was definitely verified.

Pathophysiology: The central retinal artery supplies the inner retina. Occlusion of the retinal arteries results in ischemia of the inner retina. When the inner retina is damaged, it first becomes very edematous. Over time, the edema resolves and the inner retina atrophies. In central retinal artery occlusion, the outer retina is perfused by the choroidal circulation and some inner retina tissue may survive, thus some vision is preserved. Over the course of about a week, the occlusion may recannulate. Unfortunately, the retina is very sensitive to ischemia and animal models have demonstrated irreparable damage occurs after 105 minutes of occlusion. Thus, the vision loss is often permanent with only mild visual recovery. In branch retinal artery occlusion, only part of the retina is involved. The area of the retina affected by the occluded vessels is associated with the area and degree of visual loss. In contrast, ophthalmic artery occlusion results in ischemia of both the inner and outer retina. This results in very severe loss of vision, often resulting in no light perception.

Conclusion/Treatment: Acute symptomatic retinal artery occlusion should prompt immediate urgent referral to the nearest stroke center. CRAO and cerebral ischemic stroke share the same underlying mechanisms and therapeutic approaches. At present, there is no widely accepted therapy, and practitioners vary in their management of this condition. To date, the literature on intravenous tPA for CRAO is constrained by multiple variables, including a very long treatment window and inconsistent or poorly defined visual recovery outcomes.

Keywords: Retina, emergency, CRAO.

SUCCESSFUL TREATMENT OF PERIANAL WARTS IN AN 18-MONTH OLD GIRL WITH IMIQUIMOD CLINICAL HOSPITAL OF TETOVO

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Abstract

Introduction: The incidence of anogenital warts (AGW) in children has increased dramatically in the past decade, in parallel with the increasing incidence of AGW in the adult population. The treatment options for AGW include cryotherapy, laser treatment, surgery, and chemical treatment. These regimes can be painful, variably effective and recurrence rates are high. Originally approved for the treatment for AGW in adults, imiquimod, a topical immune modifier, has also been used in the treatment of a number of cutaneous viral infections in children. We report a case of extensive perianal warts in an 18-months-old girl who was successfully treated with topical 5% imiquimod.

Objectives: A healthy 18-month -old girl presented with one month history of perianal lesions, which gradually increased in number and size. The dermatological examination revealed the presence of skin-colored, solitary and cauliflower-like, verrucous papules 1 to 5mm in diameter. The lesions extended circumferentially around the anus in a width of 2 to 3 cm. Several clustered papules were also found in the intergluteal fold. The remainder of the skin examination was unremarkable. There were no genital or extragenital warts either in the parents, however, genital warts were found in a female, part-time caregiver, suggesting a non-sexual indirect transmission of AGW.

Application of 5% imiquimod 2 times weekly showed no significant improvement after 3 weeks. We therefore stepped up the treatment to 3 applications weekly. This regime showed a remarkable improvement, with complete regression at the end of the second month of the treatment.

Material and methods: We investigated the patient we described in the article in the department of dermatovenerology in the clinical hospital of Tetovo, and we got more information about the disease and the clinical case with the case manager and the patient from Dr. Arbeni

Key message: Topical imiquimod has been used successfully to treat anogenital warts in children; however, very few reports of use of imiquimod for infants younger than 2 years of age exist. The dosing schedule and duration of treatment in infants and young children requires further evaluation.

MANAGEMENT OF PATIENTS WITH SUPRAVENTRICULAR ARRHYTHMIAS

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Abstract

Introduction Supraventricular arrhythmias in children are relatively common, often repetitive, occasionally persistent, and rarely life threatening. The precipitants of supraventricular arrhythmias vary with age, sex, and associated comorbidity. All cardiac tachyarrhythmias are produced by one or more mechanisms, including disorders of impulse initiation and abnormalities of impulse conduction. The former are often referred to as automatic, and the latter as re-entrant. Aim of presentation: The purpose of this presentation is to provide clinicians with practical and authoritative guidelines for the management and treatment of patients with supraventricular arrhythmias. These include rhythms emanating from the sinus node, from atrial tissue (atrial flutter), and from junctional as well as reciprocating or accessory pathway-mediated tachycardia. For our purposes, the term “supraventricular arrhythmia” refers to all types of supraventricular arrhythmias, excluding AF, as opposed to SVT, which includes atrioventricular nodal reciprocating tachycardia, atrioventricular reciprocating tachycardia, and atrial tachycardia.

Patients with paroxysmal arrhythmias are most often asymptomatic at the time of evaluation. Arrhythmia-related symptoms include palpitations; fatigue; lightheadedness; chest discomfort; dyspnea; presyncope; or, more rarely, syncope. Of crucial importance in

clinical decision making is a clinical history describing the pattern in terms of the number of episodes, duration, frequency, mode of onset, and possible triggers.

Diagnostic Investigations A resting 12-lead electrocardiogram (ECG) should be recorded. The presence of pre-excitation on the resting ECG in children with a history of paroxysmal regular palpitations is sufficient for the presumptive diagnosis of AVRT. An ambulatory 24-hour Holter recording can be used in patients with frequent but transient tachycardia. Transesophageal atrial recordings and stimulation and invasive electrophysiological investigation with subsequent catheter ablation may be used for diagnosis and therapy in cases with a clear history of paroxysmal regular palpitations.

Management The management of patients with symptoms suggestive of an arrhythmia but without ECG documentation depends on the nature of the symptoms. Benign extrasystoles are often manifest at rest and tend to become less common with exercise.

FOR THE FIRST TIME PERFORMED FNA OF PARATHYROID ADENOMA TO DETERMINE PARATHORMONE FROM THE PUNCTATE– CASE REPORT

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Abstract

Introduction. Measurement of parathyroid hormone (PTH) in FNA punctation could be used to distinguish thyroid nodule from enlarged parathyroid gland and also to facilitate parathyroid localization prior to surgery. This test is best used as an adjunct to cytology examination to confirm or exclude the presence of parathyroid tissue in the biopsied area. PTH values of 100 pg/mL and above are suggestive of the presence PTH-secreting tissue. Various groups have reported on the utility of this technique with specificity of 91% to 100% and sensitivity of 82% to 100%.

Case presentation. A 48 year old women admitted to our clinic for pHPT and thyroid nodules. She was referred for FNA of “thyroid nodule” D:26,6x22,9x49mm in the left lobe. After FNA cytology was performed, because of suspicious PT adenoma, we decided to measure PTH from the punctate. PTH levels are measured in the saline wash. The washes from a single area were pooled (volume 1.0 mL). The result of PTH levels measured in the saline wash was >5000 pg/mL (ref. up to 100 pg/m). PTH in the serum was 658,9...788,8 pg/ml. and ionized Ca 1.87 (ref 1.1-1.4nmol/L). TC 99 sestamibi

parathyroid scan confirmed enlarged hyper functioning parathyroid gland on the left lobe inferior.

Conclusion. This test could be additional for the distinction of nodules (thyroid or parathyroid) when FNA cytology is performed and should be interpreted in the context of the clinical presentation, imaging, and cytology findings.

Keywords: Measurement, parathyroid, hormone.

SIZES ALWAYS WERE A PROBLEM: PREVALENCE OF METABOLIC SYNDROM IN FEMALE POPULATION OF TETOVO REGION

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Abstract

Introduction: The prevalence of metabolic syndrome (MetS) is addition to clear the impact of age, race and ethnicity, basically at women gender for which there is mainly consensus among the researchers for this problem, there are also the social, economic and lifestyle factors which also affect the occurrence of MetS. This influence in the prevalence of MetS has been described in many studies but not always with consistent data between them.

Aim: The aim of this study is to determine the prevalence of MetS at female population and the frequency of its specific components and to find the causal links of socio-economic and behavioral factors, to gain an overview data for Tetovo region, never worked on it before.

Methods: 320 female were included, by completing a questionnaire, according to the WHO STEPS Instrument for Chronic Disease Risk Factor Surveillance modified for current conditions. The questionnaire consisted of 5 parts. The first part contains general data and socio-demographic data relating to ethnicity, marital status, education, occupation, employment, and family income. The second part deals with behavioral data (habits) such as tobacco use, alcohol, fat, salt, fruit and physical activity. The third part deals with the history of diseases from hypertension, diabetes and heart disease. The fourth part with anthropometric measurements and the fifth part with biochemical measurements.

Results: The study included 178 respondents with MetS/ prevalence rate of 28.25%, of whom 109 (61.24%) were female had significantly higher HDL-C values ($Z = -3.33$ and $p < 0.001$) and SP ($Z = 2.82$ and $p < 0.01$) compared to men and also 190 female (30.16%) showed values of visceral adiposity, age ratio 18 - 89 yrs, by ethnicity: 158 (46%) are Albanian, 3 (0.48%) are Roma, 34 (5.63%) are Macedonian and 9 (0.86%) are Turkish.

Conclusions: Current results showed the influence of socioeconomic status, indicators to the MetS prevalence it is influenced by sex, age and ethnicity as well as associated with socioeconomic and behavioral indicator, such as level of education, family income level, and level of physical activity. These results suggest that MetS prevention strategy planning, as a risk factor for cardiovascular disease and diabetes, in addition to pharmacological treatment should be directed towards programs to promote healthy lifestyle, awareness about the need for physical activity and body weight care and focus especially in categories with lower socio-economic status.

PROPHYLACTIC DOSE OF VITAMIN D SUPPLEMENT FOR WOMAN IN THEIR 6TH DECADE – CASE REPORT

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Abstract

Bone metabolism changes over the years in the female population with end of the menstrual cycle. In women, the sex hormones-related bone metabolism is clinically reflected in each variation over a long period of time. Osteoporosis is one of the most common pathologies in the female population, especially after menopause, which results in bone fracture. One way to monitor bone metabolism is by checking bone tissue density (BMD) determined by DEXA scan, monitoring serum concentrations of vitamin D3 (cholecalciferol) and biochemical markers of bone metabolism. Serum concentrations of cholecalciferol vary seasonally throughout the year and depend of many factors: genetic factors, sex, age, activity, lifestyle, diet, sun exposure, systemic diseases, and other chronic diseases.

This paper discusses the role of cholecalciferol in bone metabolism and its concentration in a woman at her sixth decade. The patient is observed for 12 months with an oral dose of Vitamin D3 supplement 3000 IU per day, the first 6 months.

We present the serum concentrations of cholecalciferol, DEXA, and biochemical markers of bone metabolism that are examined and monitored.

By determining the oral dose of cholecalciferol supplements, an effective serum dose of cholecalciferol is achieved, bone loss is reduced, and the quality of life is improved.

Keywords: Vitamin D3, biomarkers of bone metabolism, DEXA, BMD.

THROMBOSIS OF THE CEPHALIC VEIN

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Abstract

Case report: A 32-year-old female patient showed to the doctor because of severe pain, and a hard nodular formation with dimensions of approximately 4x6 cm in the area of the elbow on left arm, and limited movements of the arm, without signs of acute inflammation. Anamnestic, patient mentions she woke up with pain and noticed the nodule, denies personal and family history of thromboembolic events, but 17 days ago she had a venipuncture in the same region for laboratory testing. After physical examination and screening tests for hemostasis (PT, aPTT, TT) which were in reference values and D-dimers 440, is referred for echo doppler of the upper limbs which showed a clear thrombus which caused a complete occlusion of the cephalic vein, 2cm above the junction of the median cubital vein. Immediately recommended to rest the arm, use cold compresses, and given therapy with NSAIDs, proteolytic enzyme and DOAC.

After one week the symptoms were withdrawn, but the anticoagulant therapy (DOAC) with Rivaroxaban was extended up to 3 months; tab. Xarelto 20 mg 2x1 daily for the first two weeks, 1x1 daily for the next two weeks, and tab. Xarelto 10 mg 1x1 daily for two months.

After the trimester therapy with DOAC, a control echo doppler was performed and it showed a completely free cephalic vein, but with a slight residual dilated lumen of the vein. Without tests for thrombophilia in this case, we can say that the thrombosis was caused by the defective venipuncture of the cubital region.

Keywords: thrombosis, venipuncture, doppler.

GENETIC MODIFICATIONS OF SARS-CoV-2 FROM 2019-2021

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Abstract

Multiple variants of the severe acute syndrome of Coronavirus 2 (from the family of Corona viruses) Sars-CoV-2, have circulated around the globe since the beginning of the pandemic. The appearance of multiple variants of Sars-CoV-2 has been the cause of the continuation and prolongation of the pandemic, therefore knowing these mutations gives us the opportunity to fight the spread and prolongation of the pandemic. Based on the review of the literature and studies of two years for recent virus mutations, these variants have been divided into variants of concern and variants of interest. Variants of concern show evidence of increased transmissibility, increased disease severity, resistance to neutralizing antibodies induced by current vaccines or previous infections, reduced efficacy of treatments, or failure of diagnostic detection methods. Variants of interest show evidence of faster transmission, higher compatibility with human cells, milder forms of infection compared to variants of concern, and better response to current vaccines.

Disturbing variant mutations have been found to occur in a group of amino acids in the receptor binding domain, resulting in stronger and more efficient binding of the virus to human cells. The variants of concern, although they have appeared in different geographical areas, have generated the same mutations. Changes such as - Lys417 → Asn

(K417N), Glu484 → Lys (E484K), and Asn501 → Tyr (N501Y) - occurred in variants B. 1.351 and B.1.1.28 which appeared in South Africa and Brazil respectively. The P.1 variant derived from B.1.1.28 underwent a Lys417 → Thr (K417T) substitution while retaining the E484E and N501Y mutations. The N501Y mutation also occurs in the variant of concern B.1.1.7 which originated in the UK.

Multiple mutations in receptor-binding proteins (spike) of sars-CoV-2 variants enable increased transmission and resistance to antibodies. These mutations, regardless of geographic occurrence imply convergent evolution and selective advantages of the formed variations.

Keywords: Mutation, Receptor-binding protein, Sars-CoV-2, Variants, Variants of interest, Variants of concern.

HEMOPTYSIS AND PLEURAL EFFUSION AS IDENTIFIERS OF LUNG CANCER

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Abstract

Lung cancer is the most frequent cause of mortality from malignant diseases worldwide. The word “lung cancer” is dedicated to tumors that arise in the respiratory epithelium (bronchi, bronchioles and alveoli). Mesotheliomas, lymphomas and stromal tumors (sarcomas) are distinguished from epithelial lung cancer. According to World Health Organization classification, four main cell types account for 88% of all primary lung neoplasms. These are: squamous or epidermoid carcinoma, small-cell carcinoma, adenocarcinoma and non-small cell or large cell carcinoma. The remainder include undifferentiated carcinomas, carcinoids, bronchial glandular tumors (cystic adenocarcinomas and mucoepidermoid tumors), and rarer types of tumors. Lung cancer causes signs and symptoms from local tumor growth, invasion or obstruction of surrounding structures, regional nodal growth through lymphatic spread, growth at distant metastatic sites with hematogenous spread, and distant effect of tumor products (paraneoplastic syndrome). Although 5-15% of lung cancer patients are identified at an early stage during routine radiological examination (RTG, CT), most patients show some signs and symptoms. Primary central lung tissue tumors or endobronchial tumors usually cause cough, hemoptysis, wheezing and stridor,

dyspnea, and post-obstructive pneumonia (temperature and productive cough). Primary peripheral lung tissue tumors can cause pain from invasion of the pleura or chest wall, restrictive-based dyspnea, and lung abscess symptoms as a result of tumor cavitation. Regional spread tumor to the axilla can cause tracheal obstruction, esophageal compression with dysphagia, recurrent laryngeal nerve paralysis with hoarseness, phrenic nerve paralysis with hemidiaphragm elevation and dyspnea, and sympathetic nerve paralysis with Horner's syndrome. Malignant pleural effusion often causes dyspnea. Pancoast syndrome results from the growth of the tumor in the apex of the lungs involving the C1-TH2 vertebrae, with shoulder pain which spreads toward the ulnar part of the arm often with radiological destruction of the I-II ribs. Often Horner and Pancoast syndrome coexist.

Methods: This is a seven-month retrospective analytical study and three-month clinical work. We collected data from 71 patients who complained of hemoptysis and underwent the necessary examination in Clinical Hospital Tetovo from October 2022 - April 2023.

Results: This study showed that 17,5% of patients were diagnosed with small-cell carcinoma, 25,5% with squamous carcinoma, 21% with adenocarcinoma and 36% with non-small cell carcinoma. In 36,4% of cases the tumor was located in the peripheral part of the lung tissue, while in 63,6% of the cases the tumor was located in the central part.

Conclusion: There is a significant correlation between hemoptysis, pleural effusion and malignant lung diseases, especially in the cases when the change is located in the central part.

Keywords: hemoptysis, pleural effusion, lung cancer.

PRIMARY HEPATIC LYMPHOMA WITH HYPERCALCEMIA-A CASE REPORT AND LITERATURE REVIEW

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Abstract

This is the case of a 59-year-old female treated for osteoporosis and arthritis .On routine examinations since 6 months the patient has persistent hypercalcemia. Further evaluation revealed primary hepatic lymphoma as the source of her hypercalcemia. It is already known that hypercalcemia is a common complication of malignancy as described by Rodríguez-Gutiérrez et al. [1].

Hypercalcemia happens due to osteolytic metastases or secretion of parathyroid hormone related peptide (PTHrP). In both situations, calcitriol is suppressed so that the intestinal absorption, renal reabsorption, and bone resorption of calcium can be decreased. In some instances, hypercalcemia can be mediated by calcitriol. This is more common in sarcoidosis; however, there have been such reports even in mycobacterium infections and hematologic malignancies [2]. Calcitriol-mediated hypercalcemia accounts for less than 1% of all malignancy-related hypercalcemia cases and it is usually found in non-Hodgkin's lymphoma (NHL), specifically diffuse large B-cell lymphoma (DLBCL).

Keywords: hepatic lymphoma, hypercalcemia-a.

URINE ANALYSIS AND URINARY TRACT INFECTIONS IN THE REGION OF THE POPULATION OF TETOVE

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Abstract

Urine and urine tests are the main biomarkers of urinary tract infections. Our study aims to study the urinalysis and urinary parameters of men and women in the Tetovo region with acute and chronic urinary infections. In this study, we took for research 320 urine samples in the period 2021 to 2022 from patients attacked in the clinical laboratory of the Tetove hospital and the Albimedika biochemical laboratory. The analyzed patients were grouped from the age of 12 to 85 years.

Urine analysis were performed by collecting urine in sterile cups and using the urine microscopy method and urine strip test using the chromatographic method, where these analyzes were performed according to the European standards manual. Out of 320 patients, 220 were female and 100 male patients, we have resulted in patients with Proteinuria 23.3%, leukocyturia 16.6%, Epithelial Cells 9.6%, Hematuria 15.5%, pH 7.8%, Granular casts 8.8%, Triplet phosphate 8.1%, Calcium oxalate 7.7%, Glycosuria 5.5%, Bacteria 9.5% and mucous 3.3%. The obtained results show that urine and urinary infections are the main indicators of urinary tract infections in patients with acute and chronic infections as well as asymptomatic patients who have had no clinical symptoms.

Keywords: Proteinuria, Hematuria, leukocyturia, Glycosuria, Hematuria, epithelial cells.

CORRELATION BETWEEN BIOCHEMICAL ANALYSIS AND THE CYTOLOGY OF URINE SEDIMENT SMEARS STAINED BY GIEMSA METHODS

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Abstract

Objective: Urine is a body fluid consisting of approximately 95% water and approximately 5% of urea, creatinine, uric acid, phosphate, and other compounds. Urine and urine tests are the main biomarkers of urinary tract infections. It is widely used for the diagnosis of a range of health conditions in an individual or group. Despite many attempts to develop another test with greater sensitivity and specificity, cytology remains one of the best (i.e., inexpensive, quick, and reliable) ways to diagnose a variety of bladder lesions, most importantly high-grade urothelial cancer.

Material and Methods: We evaluated voided urine collection (50 ml) from 320 urine samples patients. After collection, a 20 ml of each urine samples were submitted to biochemical chemometric analysis using an automated analytical spectrophotometric equipment Urine analysis were performed by collecting urine in sterile cups and using the urine microscopy method and urine strip test using the chromatographic method, where these analyzes were performed according to the European standards manual. From each patient was

extracted a 30 ml urine which was centrifuged and then stained with Giemsa method. The cytological findings were classified using the Paris system for reporting urine cytology.

Results: The mean age of total patient analyzed was 20-85 years, where the number of male patients was 15 and female patients 25. Pregnant patients were excluded from this study. After collecting the biochemical and cytological results we found that the large number of patients had inflammatory changes in cytology which were confirmed with biochemical analysis. From a total of 20 smears we did not find any atypical urothelial cell in the smears.

Discussion: In the study, urine sediment cytology was easily performed and showed a good overall accuracy. The agreement with urinary biochemical analysis was good.

Keywords: urine, cytology, biochemical analysis.

LAPAROSCOPIC SLEEVE GASTRECTOMY FOR MORBID OBESITY

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Abstract

The epidemic of obesity in the World is a major public health issue and more than a third of adults are now considered obese (body mass index $> \text{ or } = 30 \text{ kg/m}^2$). Surgery for morbid obesity, bariatric surgery, is the most durable treatment for this disease.

Primary bariatric surgery has been proven to be effective in weight loss and improvement of weight-related metabolic comorbidities. Bariatric surgery is the most effective treatment for obesity with or without type 2 diabetes mellitus and its complications (obstructive sleep apnea, hypertension, elevated cholesterol). The laparoscopic sleeve gastrectomy is a type of bariatric surgery in which a portion of the stomach is surgically removed.

DESIGN: This constitutes a prospective study carried out in a tertiary care City Hospital in Skopje "8 th September" and included 8 morbidly obese patients who underwent LSG. The operation was performed through one 15, one 12 mm and two 5 mm ports, using the Endo-GIA stapler to create a lesser curve gastric tube over a 36-Fr bougie.

RESULTS: Operative time, complication rates, hospital length of stay, Body Mass Index (BMI), % of Excess Weight Loss (EWL) and appetite were evaluated. There were 13 females and 15 males, aged (mean \pm SD) 35.5 \pm 10.5 years and preoperative BMI 47.8 \pm 7.5 kg/m^2 . Seven of them had diabetes mellitus type 2 (8 mmol/L \pm 3 mmol/L), all patients had sleep apnea, and eleven of them had

hypertension (140/90 mmHg +/- 20/15 mmHg). Operative time was 110.7+/-30 min. There was a conversion to open surgery. All but one patient was discharged on the fourth postoperative day after an upper GI series and initiation of a clear liquid diet. At follow-up (3.0 +/-1.0 months postoperatively), the percent EWL was 30.5+/-10.5. Ten patients who received regular postoperative dietitian counseling during follow-up did better than others who did not (% EWL 35.4+/-5.8 vs 25.2+/-4.1, respectively). All patients reported significant loss of appetite. Seven patients who had diabetes mellitus had significant improvement. Sleep apnea normalized in all patients who underwent LSG. Hypertension improved in all.

CONCLUSIONS: Although the number of patients is relatively small, the data of this study indicate that laparoscopic sleeve gastrectomy is effective in weight reduction, normalization of diabetes mellitus type 2, loss of sleep apnea and normalization of blood hypertension. A higher number of patients and longer follow-up period will be necessary to evaluate long-term efficacy.

Keywords: laparoscopy, morbid obesity, health.

DENTAL MEDICINE

COMPLETE TOOTHLESS AND ITS TREATMENT WITH PROSTHETIC APPLIANCES

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Abstract

The purpose of our study is to evaluate the complete edentulism and its prosthetic treatment according to gender, jaws, age group and material and type of prosthetic appliance.

For this study, in the period 2019-2022, in the specialized dental clinic “Protetika Ag” in Tetova were examined 1785 patients, 943 males and 842 females, aged from 13 to 82 years, with an average age of 48.2 years. The obtained data were entered into patient charts using the modified form of oral health assessment according to WHO, adapted and modified to the nature of our study. The distribution of data from the statistical processing is shown by means of percentages, while the comparison was made by means of the X² -test and the coefficient of probability (p).

In completely prosthetically treated edentulism, the male gender dominates with 74% and the maxilla with 67%. The age group 50-59 years has a higher percentage of prosthetically treated complete edentulism (40%), while a higher percentage is occupied by complete removable acrylic dentures(28.07%). With advancing age, the demands for complete removable prostheses increase.

Dental treatment should have an important place during the general and comprehensive rehabilitation of patients with complete edentulism. Therapy with complete dentures restores and maintains normal ratios in the stomatognathic system, which will enable comfortable and qualitative chewing, which is a condition for better nutrition.

Keywords: Complete edentulism, prosthetic appliances, patients.

PRESENT PROSTHETIC APPLIANCES AND THEIR NEED IN PATIENTS WITH PERMANENT DENTITION

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Abstract

The purpose of our study is to determine the presence of present prosthetic appliances and the need for them according to gender, jaws and type, as well as the correlation between them.

In the time period 2020-2022, 1785 patients were examined, aged from 13 to 82 years, with an average age of 48.2 years. The obtained data were entered into patient records using the modified form of oral health assessment according to WHO, adapted and modified to the nature of our study.

We have more prosthetic appliances in the male gender with 62%, compared to the female gender with 38%, as well as more need for prosthetic appliances in the female gender with 52.9% compared to the male gender with 47.1%, while according to the type, there are more fixed bridges with 36%, while we need more partial removable prostheses with 43.87%.

There is a large number and a high percentage of unmet needs for prosthetic care and rehabilitation of the stomatognathic system in the general population. The value of the correlation coefficient ($R_{xy} = -0.29$) represents a weak inverse relationship between the present prosthetic appliances and the need for them in patients with permanent dentition.

In the results of our study there is a medium direct relationship between the present prosthetic appliances and the need for them according to the type, and that these results are statistically acceptable.

Keywords: Prosthetic appliances, patients, permanent dentition, edentulism.

THE VALUE OF THE CONCENTRATION OF CHLORHEXIDINE GLUCONATE AT DIFFERENT TIME INTERVALS IN THE CERVICAL GINGIVAL FLUID DURING PERIODONTAL DISEASE

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Abstract

Purpose. To determine the concentration of chlorhexidine gluconate (CHX) from the Perio-chip in cervical gingival fluid (FCG) at different time intervals in patients with clinical manifestation of the second stage of periodontal disease.

Material and method. In order to achieve the set goal, a total of 22 patients of both sexes aged 40-65 years of age, who were clinically and radiologically diagnosed with periodontal disease of the second clinical stage were followed up. The researchers who were part of the research had registered periodontal pocket depth of 5 mm. Perio-chip was applied to them, where the concentration of chlorhexidine gluconate was measured at certain time intervals (after 1, 24, 48, 96, 168 hours after the application). The determination of chlorhexidine was carried out through two procedures: the extraction of gingival fluid and the quantitative determination of chlorhexidine gluconate in it.

Extraction of gingival fluid. For this purpose was used Whatmann filter paper no. 5 with dimensions of 2x6 mm with which the part

determined for measurement is inserted into the periodontal pocket 1 mm, where the liquid is drawn through the Whatmann filter paper through the absorption forces against the capillaries through diffusion. The strips taken for determining the concentration of chlorhexidine gluconate in the gingival fluid with the HPLC method, the analyzes at different time intervals for the concentration of chlorhexidine gluconate were carried out at the Institute for Chemical Application and Pharmaceutical Analysis at the Faculty of Pharmacy in Skopje.

Results. The highest concentration was reached in the 1st hour after the application of the Perio-chip, while the concentration within 7 days moved from the values of 1148.70-624.37 $\mu\text{g mL}^{-1}$ where it is contained after the application of the medicinal asset. After 2-4 days certain concentration reaches the value up to 1300 $\mu\text{g mL}^{-1}$, while after this time interval the concentration gradually decreases but remains at values above 125 $\mu\text{g mL}^{-1}$

The conclusion. The perio-chip is gradually released and the concentration value according to the time interval after 1 hour is high, where from the time interval of 2-4 days it reaches the maximum concentration values, gradually starting to decrease the concentration of chlorhexidine gluconate from the 7th day onwards. According to this formulation we can calculate that this formulation has an effective controlled continuous release system of chlorhexidine gluconate.

Keywords: Chronic periodontopathy, conventional therapy, gingival fluid, chlorhexidine gluconate - Perio-chip.

FREQUENCY OF PATIENTS WITH SYSTEMIC DISEASE IN ORAL MEDICINE TREATMENTS

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Abstract

Particular interest to evaluate is the prevalence of the systemic opposite in patients who undergo intervention in the oral chamber. This will lead to the identification of patients with the right condition, will result in body modification, but most importantly the establishment of appropriate management.

Aim of study: This aimed to determine the quantitative and qualitative study of the quantitative profile of the systems and correlate them with potential postoperative medical complications in patients undergoing oral care interventions.

Methods: Data from 497 medical records for patients who underwent interventions from 2020 to the end of December 2022 through a detailed analysis of medical history files. The data found were tabulated and converted to percentages to facilitate discussion and reports in the literature. Results: Of the 497 patients, 264 (53.1%) were at risk of the first diseases of the system with a higher blood pressure disease 109 (41.28%), of the patients from cardiovascular diseases 97 (36.74%), diabetes mellitus, 91(34.47%), respiratory diseases 46(17.42%) were common special.

Conclusion: The prevalence of systemic diseases in oral cavity patients is high, therefore a complete history and a detailed clinical

- The highest prevalence of hypertension is 109 (41.28%), followed by cardiovascular diseases 97 (36.74%), diabetes mellitus, 91(34.47%).

- Patients with medical problems make doctors in the state of multiple drug therapy, and surgeons or surgeons should have all the data about these drugs and their interactions when prescribing drugs for oral procedures.

Keywords: frequency, systemic disease, hypertension, cardiovascular disease.

SHOULD ASPIRIN BE STOPPED BEFORE TOOTH EXTRACTION?

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Abstract

Purpose: To perform a benchmark analysis to determine whether aspirin should be discontinued prior to tooth extraction.

Material and method: The clinical and X-ray examination of 86 patients selected at the Oral Surgery Clinic near the Tetovo Health Center was carried out. The patients included in this study were selected based on the diagnosis for tooth extraction with suture because they were using an anticoagulant - aspirin. An equal number of patients were assigned to each group. The first group was treated without stopping aspirin, while the second group was stopped 72 hours before treatment. Patients were followed for seven days until the day of suture removal. We processed the obtained results statistically and showed them with graphs.

Results: Out of 86 intervened patients, 52 were male (60.47 %) and 34 female (39.53 %) and were between 28 and 76 years old, the highest rate of interventions was observed in patients between 36 and 55 years old, As for the jaws, we have a higher percentage in the maxilla 68 (79.07%) against the mandible 18 (20.93%) of the cases. The results showed that the risk of postoperative hemorrhage was not significantly higher in patients with aspirin therapy and was not statistically significant ($p > 0.05$).

Conclusions: The results showed that the risk of postoperative hemorrhage was not higher in patients with aspirin therapy and was not statistically significant ($p>0.05$). We recommend not to stop long-term aspirin use before tooth extraction, but to improve hemostasis methods, if necessary.

Keywords: tooth extraction, aspirin.

ASSESSMENT OF THE INFLUENCE OF MANDIBULAR THIRD MOLARS ON THE OCCURRENCE OF INCISAL MANDIBULAR CROWDING

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Abstract

Mandibular incisal crowding is described as the discrepancy between the mesiodistal widths of the four permanent incisors and the available space in the alveolar process. The aim of this research is to assess the potential influence of mandibular third molars on the development of lower incisor crowding and to analyze the relationship between mandibular incisal crowding and retromolar eruption space, eruption level and angulation of third molars. For the realization of our objectives examinations are performed on study plaster orthodontic models (mandibular dental arches) and orthopantomographic images of 80 individuals, aged between 12 and 22 years. The whole sample is divided into two groups based on the Little's index of irregularity: group I-control group composed of patients with index 0 to 3 mm, and group II- study group composed of patients with index >3mm. Calculations are made for the third molar eruption depth, eruption space, and angulation. The influence of the third molar on mandibular incisor crowding is evaluated in the dental literature and has been a challenging subject for many years. Further detailed studies are also required to assess correlation between lower anterior crowding and third molar eruption depth, angulation and space in different skeletal malocclusions, and also in different facial morphologies. *Keywords:* Incisal mandibular crowding, third molars, Little's irregularity index, orthodontic study models, orthopantomographic images.

E-MAX CROWNS VS. ZIRCONIA CROWNS AESTHETICALLY: THE BEAUTY AND THE BEAST

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Abstract

The E-max crown is the newest and most expensive type of crown, they are made from lithium de-silicated ceramics, material that has been harvested for its translucent color and durability. Zirconia dental crowns are made from zirconium dioxide, a white powdered ceramic material.

Its ceramic properties and the fact that is milled from a single block make it a strong dental prothetic.

The aim of this abstract retain in the collection of the results from our Clinic database due to the systematic work in E-Max and Zirconia Crown.

The results for us are quite important to determine the health of teeth in many variants of patients.

Availability of dental radiography and clinical trials that we own, make this journal a colorful scientific one!

Conclusion: By studying these results, e-max is preferred among dentists more than layered zirconia and all-zirconia.

Keywords: E-max crowns, Zirconia crowns, dental radiography.

EFFICACY OF METRONIDAZOLE IN PATIENTS WITH ACUTE ULCERATIVE GINGIVITIS AND PERIAPICAL INFECTIONS

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Abstract

Improper oral hygiene is the cause of dental plaque, gingivitis and dental caries. Acute ulcerative gingivitis manifests with an alternative inflammation in the form of necrotic ulcers which changes the gingiva. Periapical infections - are pathogenic lesions that appear from untreated caries and as a result of the penetration of bacteria into the dental pulp. The purpose of our work is to prove the effect of Metronidazole in patients with the above-mentioned diseases.

The data were taken from the patient files at the "Lege Artis" dental office in Gostivar, where the patients were inspected before and after using the therapy. A total of 120 patients were investigated in this survey, of which 85 of them were diagnosed with acute periapical infections and 35 of them were diagnosed with ulcerative gingivitis.

Out of 85 patients were diagnosed with acute periapical infections, Metronidazole has shown efficacy in 78% of cases, while on the 35 patients diagnosed with acute gingivitis the efficacy of the therapy has been much lower, in 45% of the cases.

Our study corresponds to the studies of many other authors. From the research we can conclude and recommend that the treatment of periapical processes can be treated with metronidazole, while for acute gingivitis further studies should be done to find an adequate therapy.

Keywords: acute ulcerative gingivitis, periapical infections, periodontium, efficacy.

PROPHYLAXIS WITH ANTIBIOTICS IN THE PRACTICE OF DENTAL AND ORAL SURGERY

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Abstract

Antibiotic prophylaxis is performed to prevent infection that may occur in the surgical area in the early postoperative period. Thus, the aim is to prevent the development of antibiotic resistance by controlling the unnecessary and inappropriate use of antibiotics.

In patients in the risk category for infective endocarditis, prosthetic heart valves, patients with uncontrolled diabetes and immunosuppressive patients (only for invasive applications) are included in the group of patients who require antibiotic prophylaxis in dentistry.

This study has been realized in 40 patients in the city of Tetova which had been treated with antibiotics due to other disorders they had. Within two years, in a clinic in Tetovo, 40 patients aged 35-50 years were treated with antibiotics, of which 55% had prosthetic heart valves, 43% had a history of infective endocarditis and 2% had a heart transplant.

In these patient, the administration of antibiotics started 48 hours before the intervention. Patient who had a history of endocarditis were treated with Amoxillin, people with prosthetic valves were treated with cephalosporin, and people with heart transplants were treated with lincomycin. The effectiveness of antibiotics was 85%, while 15% of patients showed no effect.

Based on this study, we can say that the use of antibiotics as prophylaxis in surgery has been shown to be successful in minimizing mortality and other accompanying deteriorations.

Keywords: Antibiotics, infective endocarditis, prosthetic heart valves.

THE IMPORTANCE OF ERGONOMIC POSITIONS AMONG DENTISTS IN NORTH MACEDONIA AND KOSOVA

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Abstract

Introduction: Having good mental and physical health is crucial for dentists to perform their profession effectively. The well-being of the dentist is one of the key elements for a thriving long-term dental practice. The practice of dentistry can potentially lead to physical ailments, including pain, muscle dysfunction, imbalance, and neuromuscular inhibition.

The aim of the work: The aim of conducting a survey among 68 dentists in RMV and KS was to assess their understanding, gender distribution, and adherence to ergonomics as well as their knowledge of musculoskeletal disorders as an occupational hazard. Out of the 68 dentists surveyed, 60 provided responses, which were subsequently collected, analyzed and interpreted.

Material and Methods: 60 dentists participated in a survey on RMV and RKS, which utilized a structured questionnaire comprising of 20 questions focused on knowledge, attitude, and clinical practice. The questionnaire was distributed through communication, and it consisted of 3 knowledge-based questions, 7 questions designed to assess practitioners' attitudes, and 9 questions related to their clinical practice. After the dentists completed the survey, the data were collected and analyzed.

Results: This research highlights the issue of ergonomic problems among dentists, which is a growing concern in the field of dentistry. The surveys indicate that a high percentage of dentists suffer from various ergonomic problems, which can be attributed to non-compliance with established ergonomic norms. These norms are guidelines that ensure dentists can work safely and minimize the risk of injury and strain. Lack of awareness or disregard for the significance of these norms can lead to a range of ergonomic problems such as back pain, neck pain, shoulder pain, and hand and wrist injuries. To address this issue, it is important to educate dentists about the importance of ergonomic norms through training and education programs, which can help to improve their health and well-being and enable them to perform their work safely and effectively.

Conclusion: The survey results clearly indicate that there is a need for an upgrade in the knowledge and gender perspectives of dentists in RMV and RKS regarding ergonomics and musculoskeletal disorders. While risk is inherent in any profession, it is essential to take proactive measures to mitigate the risks and ensure the safety and well-being of professionals. This includes staying up-to-date with the latest guidelines and best practices in ergonomics, as well as implementing practical strategies to minimize the risk of musculoskeletal disorders. By doing so, we can create a safer and healthier work environment for dentists and other professionals alike.

Keywords: Dental Ergonomics, Repetitive Strain Injury (RSI), Musculoskeletal Disorders (MSDs), Chair-side Delivery System.

USAGE OF ANTIBIOTICS IN THE TREATMENT OF PULPAL INFECTIONS

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Abstract

Pulpitis is an inflammation of dental pulp which results from untreated caries, trauma, or many restorations. The main symptom is pain.

The purpose of this research is to prove the effectiveness and types of antibiotics used on patients that were treated for pulp infections.

The data was taken in a combined manner between the medical history and data of the patients on the register of the dental clinic "Dentina" in Kamenjane village, in a time span of 90 days where we have included 42 patients of different age groups, from 5 year olds to adult ages. The reasons for the usage of antibiotics on these patients were: pulsating pain, swelling, fever, spontaneous pain and bad breath. The antibiotics that have been used with most effectiveness were: 52% Amoxicillin + Clavulanic acid, 24% Phenoxymethylpenicilin, 19% Cefalexin and 5% Clindamycin.

During our research we have noticed that the antibiotics mentioned above have been effective in 95% of cases and caused a reduction of infection and pain. In 5% of cases the pain has been reduced but we were not able to save the tooth. Also while analyzing the medical

history of patients we have noticed that during viral seasons we had more patients that had issues with these sicknesses, because the immune system was lowered by the virus and symptoms of the sickness appeared, which in this case was chronic and hidden.

Keywords: Pulpal infections, antibiotics.

INFLUENCE OF DIFFERENT RISK FACTORS ON PRIMARY DENTAL IMPLANT STABILITY ON TWO TYPES OF DENTAL IMPLANTS

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Abstract

Introduction. The primary stability of dental implants may be impaired by the presence of systemic diseases, such as cardiovascular disease, osteoporosis, diabetes, hepatitis, severe periodontal disease and some reconstructions that compromise bone regeneration and integration. The main goal of this research was to determine the predictive values of different risk factors on the primary stability of dental implants.

Material and method. This clinical study was carried out in one dental clinic "Vita-Dent" in Tetovo. Two types of implants were used, Mis Seven implants and Straumann Standard plus and Bone level implants. The stability of the implants was measured by resonant frequency analysis using the instrument Osstell IDXTM (Ostell AB, Gothenburg, Sweden).

Results. The biggest influence on the primary stability in patients with Mis dental implants had smoking (Beta=-0.53), followed by HTA (Beta=-0.53), diabetes (Beta=-0.32), periodontal disease (Beta=-0.26), age (Beta=0.21), and gender (men) (Beta=0.05). Among the all, 50, no risk factors were registered in 30.00 %, 22.00 % were smokers, 12.00 % had diabetes, 20.00 % had HTA, 2.00 %

had osteoporosis and 14.00 % had periodontal disease. The biggest influence on the primary stability on Straumann dental implants had the age of the patients (Beta=-0.27), followed by diabetes (Beta=-0.25), gender (Beta=0.25), periodontal disease (Beta=-0.20), smoking (Beta=-0.14), HTA (Beta=0.11), and osteoporosis (Beta=-0.07).

Conclusion. The most significant risk factors affecting primary implant stability, and hence the longevity of implants, are tobacco consumption, systemic factors such as diabetes and hypertension and the local negative impact of various forms of periodontal disease.

Keywords: primary stability, dental implants, stability, risk factors.

THE RESPONSE OF YEAST CELLS TO THE STRESS CAUSED BY THE CORROSION OF DENTAL MATERIALS

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Abstract

Numerous and different artificial materials are used to restore lost, damaged or deformed oral structures under the collective name dental materials. The most commonly used dental materials are metal alloys of Cr, Ni, Ti, Fe, Mo and Co due to their high strength and good resistance to corrosion. Corrosion is considered the most important factor in the selection of metallic dental materials. Although dental materials have an oxide layer that makes them resistant to corrosion, these biocompatible metallic materials tend to corrode locally under changing conditions in the oral medium and degrade over time, releasing metal ions into the oral cavity and thereby contributing to general toxicity. Metal ions released from corroded dental materials are transition metals, capable of producing reactive oxygen species and causing oxidative stress. The yeast *Saccharomyces cerevisiae* has efficient mechanisms for removing the toxicity of various metals and can survive various stress conditions, which makes it an ideal model organism for studying metal-induced stress response mechanisms.

In this research, the metabolic activity of yeast cells exposed to metal ions released from dental materials “Rematitan” and “Remanium” was studied. A cell proliferation test (XTT test) was used to determine metabolic activity. The results of the research show that metal ions released from dental materials over a period of 7 days have the highest

toxicity to yeast cells. The metabolic activity of the cells is equal both with “Rematitan” and with “Remanium”, but there is less metabolic disturbance of the cells in those cells that were treated with “Rematitan”.

Keywords: dental materials, *Saccharomyces cerevisiae*, oxidative stress, metabolic activity, metal ions.

MICROBIOLOGIC EVALUATION OF 2 METHODS OF ARCHWIRE LIGATION

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Abstract

Aim: The aim of this study was to determine the changes in microbial flora after orthodontic bonding and whether two different archwire ligation techniques affect these changes. **Material and method:** twenty-four orthodontic patients undergoing treatment with fixed appliances took part in the present study. Each orthodontic arch was fixed with elastomeric rings on one side of the midline, and on the other side with steel ligatures. The BANA test was used to detect *Porphyromonas gingivalis*, *Tannerella forsythia*, and *Treponema denticola* from the bottom of the periodontal pockets of the maxillary premolars and the mandibular incisors on both sides of the jaws. Microbial records were collected before bonding (T1), one week later (T2), and three months after the bonding (T3). ANOVA Chi Sqr test and Cochran Q test were used to statistically compare the groups. **Results:** Teeth ligated with elastomeric rings contained greater numbers of microorganisms one week and three months after the bonding than teeth ligated with steel ligature wires. A significant difference in the values of BANA test was also determined between all three examined periods in the teeth ligated with elastomeric rings, while an insignificant difference in relation to T1, T2, and T3 was observed in the teeth ligated with wire ligatures. **Conclusion:** The method of archwire ligation has a significant impact on the microbiological flora of patients with fixed orthodontic appliances. Elastomeric rings stimulate the growth of periodontopathogenic

bacteria which is a predisposing factor for the occurrence of caries and inflammation of the gingiva.

Keywords: archwire ligation, microbial flora, elastomeric rings, periodontopathogens, fixed orthodontic appliances.

DENTAL ANOMALIES ACCORDING TO GENDER IN 12- TO 14- YEAR OLD CHILDREN

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Abstract

A number of studies show the frequency of various dental anomalies in different populations, but the results are conflicting and they are attributed to racial differences, different ways of examining and different criteria. Because of those reasons and dilemmas during their rehabilitation we were encouraged to direct our aim to determining the prevalence of dental anomalies according to age, and we used activities resulting from the basic criteria for assessment of oral and dental health which WHO recommends.

Materials and methodology - Systematic reviews were made on respondents of both genders (female 77 and male 78) aged 12- 14 from Polog Region, North Macedonia. Among the respondents, presence of the following dental anomalies was recorded: irregularities in the shape of the teeth, in the size of the teeth and in the color of the teeth. The obtained results were statistically processed with descriptive statistics analysis using the “t” test where $p > 0,05$ is considered statistically significantly. Differences with the appearance and presence of dental anomalies, recorded according to type in both studied groups, were tested with Pearson Chi-square 2 . The results for the distribution of the entire sample of respondents indicated an almost equal number of respondents, that is, 77 (46.52%) male and 78 (48.48%) female who had any type of the mentioned anomalies,

and the difference in values in the group between male and female respondents is not statistically significant ($p>0.05$).

Our data highlight the importance of encouraging parents to visit the dentist with their children at an early age. It also illustrates the need for a detailed and careful clinical examination by the dentist.

Keywords: dental anomalies, child, examination.

APPLICATION OF CORONECTOMY AS AN ALTERNATIVE SURGICAL METHOD FOR THE TREATMENT OF IMPACTED MANDIBULAR THIRD MOLARS - A CASE REPORT

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Abstract

The extraction of the mandibular third molar is a difficult surgical approach, because of the close relation of the tooth to the inferior alveolar nerve. Coronectomy can be applied as an alternative technique instead, in order to avoid inferior alveolar nerve damage and its sensitivity changes. Removing the crown of mandibular third molar and leaving the roots intact, reduces the risk of nerve injury and postoperative neurosensory deficits.

Specific radiographic signs have been identified to enable appropriate surgical approach; however, CBCT is considered as a more effective imaging technique, allowing better decisions to be made with regards to the removal technique. This case report demonstrates the complex surgical approach to managing the impacted third mandibular molar of a 24 years old female patient, where the roots of the tooth are in a close proximity to the inferior alveolar nerve. The patient was followed up for a 12-month period, where a clinical, CBCT and radiographic evaluation was made. No discomfort of the patient was registered after the surgery, neither deficit in sensitive nerve function

for the anticipated follow-up period. Coronectomy reduces the incidence of complications related to the inferior alveolar nerve, although it does not completely exclude the possibility of complications of another nature related to the subsequent migration of the roots.

Keywords: coronectomy, CBCT, mandibular third molar, impaction, inferior alveolar nerve.

FACIAL AESTHETIC INJECTIONS IN CLINICAL PRACTICE: PRETREATMENT AND POSTTREATMENT CONSENSUS RECOMMENDATIONS TO MINIMIZE ADVERSE OUTCOMES

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Abstract

Facial aesthetic treatment with injectable neuromodulators and hyaluronic acid fillers is well established, with favourable safety profiles and consistent outcomes. As with any medical treatment, adverse events and complications may occur. Adverse events associated with these products are typically transient and mild to moderate in severity. Serious adverse events, such as infection and intravascular occlusion, are rare. Proper patient selection, consent and counselling, preparation and impeccable injection technique are important risk reduction strategies. Both clinicians and patients must be alert to the signs and symptoms of complications so that appropriate treatment can be started promptly. In this article, the authors review the current literature and provide their consensus recommendations for minimising adverse outcomes when treating patients with botulinum toxin or hyaluronic acid fillers.

Keywords: aesthetic injections, intravascular occlusion, facial aesthetic.

DENTAL IMPLANT PLACEMENT IN PATIENTS ON BISPHOSPHONATE THERAPY

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Abstract

Bisphosphonates are antiresorptive medications used to prevent and treat a wide range of diseases such as osteoporosis, Paget disease of bone, malignancies metastatic to bone, multiple myeloma and hypercalcemia of malignancy. One of the most important complications for patients who are taking therapy with bisphosphonates is osteonecrosis of the jaw related to bisphosphonates (BRONJ).

This review aimed to consider dental implant placement in patients who have been treated with or are currently on bisphosphonate medication, based on research using electronic databases PubMed, Google Scholar and Elsevier, under the following keywords: dental implants, bisphosphonates, osteonecrosis, BRONJ.

We performed a literature review to explore the relation between dental implants and bisphosphonates depending on several factors such as the way of administering (oral or venous), the length of the therapy, the dose of the medicine, other chronic therapies that the patient has taken and which affects the bisphosphonates. The way of administering bisphosphonates is crucial because patients treated with intravenous bisphosphonates seem to have a higher chance of developing implant-related osteonecrosis of the jaw. The intraorally treated patient group appeared to have more successful results. Benefits that bisphosphonates offer to patients clearly outbalance the

risk of potential side effects; however, any patient for whom prolonged bisphosphonate therapy is indicated, should be provided with preventive dental care in order to minimize the risk of developing this severe condition and to have high success rate of dental implants.

Keywords: Dental implant, bisphosphonates, osteonecrosis, BRONJ.

RADIOGRAPHIC ANALYSIS OF DENTAL STRUCTURES FOR FORENSIC IDENTIFICATION: A SYSTEMATIC REVIEW AND META-ANALYSIS

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Abstract

Radiography has been an essential tool in dental forensics for identifying individuals through dental records. However, the optimal radiographic techniques and measurements for accurate and reliable identification remain debated. The literature on radiography in dental forensics is extensive and scattered across multiple disciplines, making it challenging to integrate the findings. This study predicts that radiographic techniques and measurements that capture unique dental anatomy features, such as tooth shape, size, and position, are most effective for dental identification in forensic contexts. Based on existing literature, the overall accuracy and reliability of radiography for forensic dental identification are predicted to be high. The study aims to identify a range of radiographic techniques and measurements effective for dental identification in forensic contexts and quantify the overall accuracy and reliability of radiography. The study is also expected to identify gaps in the literature and areas for further research. The findings could have critical implications for the use of radiography in forensic dental identification by facilitating the development of standardized radiographic protocols and techniques. Additionally, the study could contribute to an improved understanding of the reliability and validity of radiographic methods for forensic dental identification, and could inform the development of new technologies and methods for this purpose.

Keywords: Dental, Radiography, Forensics, Identification, Techniques.

REHABILITATION OF THE EXTREME ATROPHIC JAWS

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Abstract

The implant-prosthetic rehabilitation is a current practice in clinic dentistry and is characterized by safe and predictable results in long term. However, in order to obtain the success of implant therapy, in the preliminary stages it is essential to assess and classify the amount of available bone. In fact, this evaluation is fundamental for the correct implant placement, according to the principles of modern prosthetically driven implant placement. In this work we will present our experience on several alternatives for the full arch rehabilitation of the jaws with different degrees of resorption. The main goals are to avoid zygomatic and pterygoid implants and to still be able to perform the most compromised scenarios. Reconstructive surgery, the fresh frozen homologous bone represents a valid alternative to the autologous bone, because allows bone regeneration thanks to its osteoinductive and osteoconductive properties. The purpose of this work is to describe the surgical-implant-prosthetic treatment of two complex cases using particular, fresh frozen homologous bone grafts to correct the severe atrophy of the maxilla, and, then, once the graft integration was obtained, implant therapy was performed and implants placed in native bone were immediately loaded.

Keywords: Jaws rehabilitation, bone regeneration, dental implants.

PHARMACY

INTERACTION OF NICOTINE WITH SINGLET AND TRIPLET DIOXYGEN MOLECULE

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Abstract

The fate of nicotine molecules, when heated at different temperatures in different surroundings (i.e. atmospheres) is of fundamental importance to harm reduction when inhaling the aerosols of different tobacco products. In the present study, we tackle this issue from the viewpoint of molecular modeling. Series of ab initio molecular dynamics simulations of free nicotine molecule as well as of nicotine molecule in the presence of oxygen molecules at series of different temperatures ranging from 600 to 1200 K are performed with the atom-centered density matrix propagation scheme (ADMP). Simulations are performed at different levels of theory. The possible degradation pathways implied by the generated molecular dynamics trajectories are related to the products detected in the smoke of conventional cigarettes and aerosols generated by electronic devices for controlled heating of tobacco.

Keywords: (Nicotine, Tobacco Smoke, Combustion, Heated tobacco products - HTP).

RADIOPHARMACEUTICAL REGULATIONS

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Abstract

Radiopharmaceuticals, being both a drug and an unsealed radioactive source, are subject to dual regulatory restrictions, that of drug agencies and that of radiation protection. The introduction of new radionuclides into clinical practice is a challenging process not only from researchers, clinicians, but also from a pharmaceutical regulatory perspective. Good practices including GMP, GDP, GLP and GCP should be followed in this process. Regulatory bodies in both the US and Europe clearly require a more detailed review of radiopharmaceuticals as they transition from preclinical development to clinical application. Some documents have been published recently, but some of them are in the draft version. The FDA guidelines do not define legally enforceable responsibilities. However, these guidelines describe the Agency's current opinion on a particular topic and should be viewed as recommendations only, unless specific regulatory requirements are required. The US guidelines are more industry oriented and conversely, the EU Guidelines are worded in a way that will assist in the development of diagnostic and therapeutic radiopharmaceuticals, for use in the pharmaceutical industry. A comprehensive study of the various regulatory bodies may help to formulate a harmonized guide that may allow free exchange of radiopharmaceuticals across different countries. The existing regulation in the Republic of North Macedonia was harmonized with the European one in 2016, and there is still no interpretation in it of a large number of proposals, changes and adjustments that are discussed at the European and world level. Keywords: Radiopharmaceuticals, radionuclides regulatory framework, FDA guidelines, EU guidelines.

HYPOGLYCEMIC EFFECT OF DIFFERENT DOSES OF CANNABIDIOL ADMINISTERED INTRAGASTRICALLY AND INTRAPERITONEALLY IN EXPERIMENTAL DIABETES

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Abstract

Diabetes mellitus (DM) is a metabolic disease that has a complex etiology involving multiple factors. Defects in insulin secretion and/or insulin effect lead to a loss of glucose regulation and disturbances in carbohydrate, protein, and lipid metabolism. Exogenous insulin and other oral antidiabetic medications constitute standard antidiabetic therapy, but both are ineffective in certain patient populations and frequently come with severe side effects. (Jadoon et al., 2016). Therefore, there is an immediate need for investigation regarding novel hypoglycemic agents.

Cannabidiol (CBD), a non-psychoactive cannabinoid found in *Cannabis sativa*, has attracted a lot of interest due to the wide range

of its extensive spectrum of biological activities and favourable safety profile (Lim et al., 2021). Previous research has shown that CBD has significant therapeutic promise for treating streptozotocin (STZ)-induced DM, particularly with regard to its effects on oxidative stress, inflammation, and cell death (Jadoon et al., 2016). Whether or not CBD has a direct impact on blood glucose levels is an ongoing debate in the literature, with conflicting results seen in animal models (Fisher et al., 2010) and humans (Jadoon et al., 2016; Mattes et al., 2021). These discrepancies are likely the result of variations in CBD dosing and delivery methods used in distinctive studies.

Thus, the objective of this study was to investigate the potential hypoglycemic effects of different doses of CBD in healthy rats. Moreover, we aimed to compare the effectiveness of the same doses of CBD given both orally and via intraperitoneal route of administration in rats. Finally, further investigations will be made in diabetic rats to estimate the potential antihyperglycemic effects of CBD oil.

Keywords: Diabetes mellitus, Cannabidiol, OGTT, hypoglycemic effect.

THE POTENTIAL AND DRAWBACKS OF ARTIFICIAL INTELLIGENCE IN CLINICAL PHARMACY

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Abstract

With the continuous technological growth, the application of artificial intelligence (AI) in healthcare service and pharmaceutical research has increased tremendously. AI has quickly started to be applied in disease diagnosis, personalized treatment, drug discovery and has an impact on clinical decision making.

Thus, the objective of this systematic review study was to identify and report recent developments in AI research for the practice of clinical pharmacy services. A bibliographic research is done using domains such as: PubMed, EBSCO, Scopus, ScienceDirect and Google Scholar using phrases and keywords such as: ‘Artificial intelligence’, ‘Clinical pharmacy’, ‘Personalized treatment’, ‘Pharmaceutical research’ ‘Prediction’, ‘Disease diagnosis’, etc., to select articles published within the last twenty years. In clinical pharmacy practice, AI can be used to help guide decisions and reduce errors on dosage and disease diagnosis, help in pharmacokinetic-guided dosing of narrow therapeutic index drugs, provide new tools for understanding drug–drug interactions, as well as predicting alternative drugs if a drug is not available, predict medication use in hospitals and health systems more accurately, predict therapy outcomes, reduce cost and treatment time. Apart from the listed

advantages, AI also has some limitations. It requires a system based on huge amounts of data, standardized processes, difficulties in implementation and an ethical framework. The development and advances of AI technologies for clinical pharmacy services promise cost-effective healthcare even though significant efforts have to be made to bring values to clinical pharmacy services in real practice.

Keywords: Artificial intelligence, clinical pharmacy, personalized treatment.

BREAST CANCER CELLS MIGRATION INHIBITED BY COUMARIN DERIVATIVES

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Abstract

Breast cancer is a common malignancy that affects a significant number of women worldwide. The potential for cells to migrate or invasively grow, in addition to proliferation, is the most important factor for cancer development and cancer metastasis. Hence, to assess whether coumarin derivatives affect the ability of MCF-7 cells to migrate, a wound closure test was performed.

Scratch-wound migration assay was performed on MCF-7 cells. MCF-7 cells were plated in 24 well-plates and when they grew into full confluence, a wound was induced into monolayer cells by scraping a gap using a micro-pipette tip (100 μ L). Then, the coumarin compounds in different concentrations (0.01, 0.02, 0.05, 0.1 mmol L⁻¹), alone or with Doxorubicin (1 μ mol L⁻¹), were immediately added and maintained for 24 h. The speed of wound closure of treated and untreated cells was compared. Photographs were taken under 10 \times magnification using phase-contrast microscopy (Zeiss Microscopy, Germany) immediately after the wound incision and at later time points. The gap distance was quantitatively evaluated using ImageJ software (v. 1.48; Wayne Rasband, NIH, USA) measuring the scratch area at 0 h and 24 h after incubation. The results were pooled from three independent experiments with three replicates per experiment. Given that the rate of wound closure reflects the migration ability of breast cancer cells, these results show that treatment with coumarin derivatives can inhibit cell migration.

Keywords: breast cancer, breast cancer therapy, cell migration, coumarin derivatives, doxorubicin.

WORKFORCE IN PRIMARY PHARMACEUTICAL CARE - CHALLENGES AND COMMITMENTS IN THE FUTURE

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Abstract

The workforce (health workers) is one of the main components in building a quality health system. In the pharmaceutical sector and especially at the primary care level, the health worker, in this case the pharmacist, is the main and decisive link for a better adherence to therapy. Completing the capacities for human resources in the pharmaceutical sector, especially in primary care, is one of the most efficient policies which results in increased health care performance, especially in developing countries. In many countries, the pharmacist profession is considered the most reliable profession for citizens, especially after the pandemic crisis. This is because the pharmacist is more easily accessible to patients.

Considering the workforce in the pharmaceutical sector as very important in improving access and rational use of medicines, WHO has set as its main objective a more serious commitment to more accurate data on the healthcare workforce. This study aims to make a detailed analysis on the recent developments of workforce capacities at the primary level of the pharmaceutical service. Also, to study the possibilities for the implementation of policies that will affect the development and investment in the workforce in the health sector in accordance with the health needs of the population.

Keywords: workforce, primary pharmaceutical sector, health policies, public health protection.

SENSITIVITY OF CERTAIN BIOMARKERS WHEN COMPARING PATIENTS MEDICATION- OVERUSE HEADACHE (MOH)

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Abstract

Migraine is a common headache disorder that causes significant disabilities. Headache developed or significantly worsened during medication overuse (for simple analgesics and combination acute medications, intake must be 15 days or more per month for triptans, ergotamines, opioids, and combination analgesics; 10 days per month sufficient to get a diagnosis of Medication-overuse headache-MOH). A recent epidemiologic study on drug-induced disorders demonstrated that excessive drug use can lead to nephrotoxicity. Microalbuminuria was common in patients under the influence of nephrotoxic drugs. Subclinical renal damage cannot be identified by routine tests (serum creatinine), and microalbuminuria is a more sensitive indicator of renal dysfunction. The aim is to confirm the sensitivity of certain biomarkers when comparing patients treated with NSAIDs in combination with other drugs (analgesics, triptans and antidepressants) with patients treated with monotherapy by NSAIDs. Besides conventional markers of renal functioning (serum/urine creatinine determined by Jaffe methods), enzymatic assay for urea serum and Ion selective electrode (ISE) are used for

determination of electrolyte in serum. Immunoturbidimetric assay for determination of urinary albumin, microalbuminuria and β 2-microglobulin will be used. In the case of combination therapy (analgesics, triptans and antidepressants) a significant effect on the increase of microalbuminuria has been demonstrated.

Keywords: Medication-overuse headache, Nephrotoxicity, Microalbuminuria.

PARACETAMOL POISONING IN PEDIATRICS

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Abstract

Paracetamol is one of the most popular analgesic and antipyretic drugs. The existence of this drug in different pharmaceutical forms makes it even easier to use it at different ages. It is considered first-line treatment in children, for the treatment of pain and fever. With its widespread use, it has become one of the most common pharmaceuticals associated with accidental poisoning. Infants and children are particularly susceptible to acute overdose of paracetamol, which often cause: hepatotoxicity, hypothermia, thrombocytopenia, leukopenia, respiratory side effects, etc. In 80% of the presented cases, paracetamol was used for fever, therefore hypothermia is one of the most expressed symptoms. The main purpose of this paper is to identify toxic doses of paracetamol in children, symptoms, management and treatment of these poisonings. From this research, in a single pediatric clinic, many paracetamol intoxications have occurred due to parents' mistakes, therefore these mistakes should be made known to the public in order to be avoided by others.

Keywords: Paracetamol, poisoning, dose, hepatotoxicity, hypothermia.

IMPORTANCE OF THE CODE OF ETHICS FOR PHARMACY STUDENTS

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Abstract

This study refers to students, in particular students of the Pharmacy study program, as a guide to be informed in the best possible way about professional ethics. Bearing in mind that during the exercise of the profession as a pharmacist the main pillars are: the pharmacist-patient relationship, the colleague-colleague relationship, the relationship and the moral and ethical behaviour of the pharmacist in health institutions, therefore it is mandatory to know the science of ethics, morals, good and humane behaviours, during the exercise of this profession. This research is made in order to serve pharmacy students and young pharmacists by providing you with the simplest possible way of learning to build proper relationships with patients, avoiding aggressive and bullying behaviours that harm, first of all, themselves, the patients then the social circle and others. Unethical behaviours can appear in different forms within health institutions or even outside them, in pharmacist-patient or patient-pharmacist and colleague-colleague relationships. The main purpose of this research is to investigate the level of knowledge of students about professional ethics and to analyse the relationship between the knowledge and attitudes that students have related to the implementation or non-implementation of the norms of the Code of Ethics. This study is quantitative, for its realization were used the data provided by the surveys conducted with the Pharmacy students of the University of Tetova.

Keywords: behavior, code of ethics, pharmacist, patient, student.

FORMULATION AND ANALYSIS OF WOUND HEALING EFFECT OF CREAM WITH PUMPKIN SEED OIL

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Abstract

Pumpkin seed oil and black seed oil have been long known for their therapeutic properties in treating various skin conditions such as eczema, wounds, and dryness. The present study reports on the development of a nourishing cream using pumpkin seed and black seed oils as key ingredients. The aim of this study was to optimize cream formulation of the cream and investigate its efficacy in improving skin hydration, elasticity, and determine the wound healing effect on the skin. The cream was formulated using a combination of natural ingredients, including chamomile infusion, pumpkin seed and black seed oils, bees wax, lanolin, shea butter, honey and vitamin E. The physical properties and storage stability of the formulations were analyzed. A total of 5 participants were recruited to test the cream over a period of four weeks. The results showed a significant improvement in skin hydration and burn wound healing after just one week of use. The cream also improved skin elasticity with an increase in skin firmness after four weeks.

The findings of this study suggest that a nourishing cream containing pumpkin seed and black seed oil can be an effective natural solution for improving skin hydration and elasticity. The use of natural ingredients in the formulation of the cream also makes it a safe and eco-friendly option for skincare. Future research is needed to explore the long-term benefits of using pumpkin seed and black seed oil-based creams for skincare.

Keyword: pumpkin seed oil, cream, formulation, wound healing effect.

RARE DISEASE AND ORPHAN DRUGS

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Abstract

Orphan drugs are drugs that are used to diagnose, prevent and treatment rare diseases or conditions, and are necessary for the needs of public health. Rare diseases represent an important medical and social problem for both developed and developing countries. Rare diseases are diseases that affect a small number of the population, which can be chronic, progressive and often life-threatening. There is no single, unified definition for rare diseases in global level, but national regulatory of every country define the criteria for rare disease. According to the National Institute of Health, there are over 7 000 rare diseases. However, researches and development of rare drugs have several challenges such as: low prevalence of the disease, severity of the disease, heterogeneous patient population and limited knowledge on the history of the nature of diseases. For these reason, the regulatory bodies make efforts to encourage drugs manufactories to develop orphan drugs through some incentives: tax credits and research aids, simplification of marketing authorization procedures, and extended market exclusivity. Also numerous patient organization were founded to improve situation. Despite efforts and advances, there are still many rare diseases for which there is no safe and effective treatment.

The aim of this paper is to give a brief literature review of articles, documents and available legislation about rare diseases, orphan drugs and marketing authorization of orphan drugs

Keywords: rare disease, orphan drugs, legislation, marketing authorization.

OVER THE COUNTER USE OF NSAIDS AND THE AWARENESS OF THEIR NEPHROTOXICITY AMONGST THE POPULATION OF TETOVO, NORTH MACEDONIA

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Abstract

The safety of non-steroidal anti-inflammatory drugs (NSAIDs) has been the topic of much debate.

The aim of this study was to see the frequency of non prescribed and prescribed use of NSAIDs, their reason of use, side effects and the awareness of the participants that use them.

The study was based on a Google platform questionnaire where part of this study were 202 participants. A very high percentage of the participants have used over-the-counter NSAIDs, without doctors prescription. These drugs were mostly used to reduce inflammation and pain related to conditions like: headache/ migraine, menstrual cramps and pain related to rheumatic diseases. Overall considering the increased incident of renal complications most people were not instructed to do laboratory tests after using NSAIDs with a doctor's recommendation.

Following the most used NSAID's without doctor's prescription was Nimesulide and second coming Ibuprofen, Ketoprofen, Diclofenac,

Indometacin and others. It is worthy of emphasizing that meanwhile in our country the most used NSAID's are Nimesulide and Ibuprofen, in the USA the most commonly used is Ibuprofen and Naproxen, while in the UK the most common is Diclofenac. When asked about the side effects most of the users had no side effects and another portion answered they had had GI tract irritations, as for the side effects 43.4% didn't have enough information about the potential risks following the use of NSAID's. In conclusion the participants shared interest in bringing awareness about the use and side effects of NSAID's without doctor's prescription.

Keywords: NSAID's, misuse, side effects, nephrotoxicity.

**OPTIMIZED EXTRACTION AND CLEANUP
PROTOCOLS FOR THE MULTIRESIDUE
DETERMINATION OF ANTIMICROBIAL DRUGS
IN MILK USING LIQUID
CHROMATOGRAPHY/TANDEM MASS
SPECTROMETRY**

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Abstract

Antimicrobial drugs are used as chemotherapeutic agents for treatment, prophylactic medication, growth promoters and improvement of feed efficiency.

Indiscriminate use of these drugs may leave residues in milk which could pose a potential threat to human health and undesirable effects on consumers, including allergic or toxic reactions, carcinogenic effects, bacterial resistance and imbalance of the gut microflora.

To guarantee the safety of food products as well as public health is necessary from monitoring of the levels of antimicrobial residues.

The sample preparation, extraction of different physicochemical residues of milk, preconcentration of the extract and elimination of any matrix interferences that may affect the overall performance of the analytical methods. SPE extraction with Oasis HLB column is one

of the most commonly used techniques for sample preparation which provides an effective and repeatable method for the selective concentration of target analytes in complex matrices. Different variations of this method, including acetonitrile, methanol and acetonitrile: methanol (50:50), 20% trichloroacetic acid and McIlvaine buffer were optimized.

Chromatographic separation of analytes was achieved on a Kinetex®C18 column and provided satisfactory resolution within the shortest run time. The ESI positive ionization was promoted and detection of the compounds was improved with the acidic mobile phase.

After optimization of chromatographic conditions, MS/MS conditions and extraction procedure, the LC-MS/MS method was validated according the criteria of the Commission Decision 2002/657/EC.

Keywords: sample preparation, extraction, antimicrobial residues, optimization, validation LC-MS/MS method.

LABORATORY PREPARATION AND EMULSIFICATION OF COLD CREAM WITH PINE EXTRACT AND NATURAL HERBAL OILS

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Abstract

Cold cream with pine extract is a skincare product designed to provide moisturization and nourishment to the skin. The cream is enriched with pine extract, which is rich in antioxidants, and has been used in traditional medicine for its anti-inflammatory properties. This cream can be used for all skin types, including sensitive skin.

The cream was prepared by using the cream base that is bee's wax, avocado and almond oil, spermacet, shea butter, borax, vitamin E and the main ingredient is pine extract which is extracted from the bark of *Pinus pinaster* tree. The extract contains a high level of anthocyanidins, which are potent antioxidants that protect the skin from environmental stressors and UV radiation

The preparation was made by using the water in oil method for a homogenous mixing of all the excipients and the herbal extracts. Emulsification and stabilization of the two-phase system was achieved by saponification without adding additional emulsifier.

After preparing the cream was evaluated by using different evaluation methods for parameters like: appearance, phase separation. By using this technique no change of the physical properties was observed.

The herbal extract containing cold cream gives the cooling and soothing effect due to slow evaporation of water present in the emulsion. The cold creams are more moisturizing as they provide an oily barrier which reduces the water loss from the outermost layer of the skin.

Keywords: cold cream, pine extract, preparation, emulsification.

FORMULATION AND HOMOGENIZATION OF NOURISHING CREAM WITH HERBAL CONTENTS

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Abstract

This nourishing cream is formulated with natural ingredients such as pomegranate extract, aqueous solution of blueberry, linseed oil, castor oil, and avocado oil, all of which are known for their moisturizing and nourishing properties. The aim of the study was the evaluation of an adequate formulation as well as the homogenization of this formulation using triethanolamine as an emulsifier.

Pomegranate extract contains antioxidants that protect the skin from environmental damage and promote skin regeneration, while linseed oil helps maintain the skin's natural barrier and prevent moisture loss. Castor oil has anti-inflammatory and antibacterial properties, making it effective in treating acne and other skin irritations. Avocado oil is rich in vitamins A, D, and E, which help nourish and protect the skin, and also promotes collagen production and skin elasticity.

The preparation was made by using the water in oil method for a homogenous mixing of all the excipients and the herbal extracts. By adding triethanolamine as an emulsifier, the emulsification of both phases has been achieved, thus preventing the formation of lipid phase crystals. The addition of triethanolamine was more effective in stabilizing the system than increasing the speed of homogenization. After preparation, the formulation showed no evidence of phase separation and good appearance, easily washable, stability at room temperature.

Formulation, preparation and homogenization of this cream performed in laboratory conditions provide valuable data which in the future can serve as efficient methods in the large industrial production.

Keywords: nourishing cream, formulation, homogenization, herbal oils.

EXTRACTION OF CARROT ROOTS FOR THE PREPARATION OF ANTI-AGING CREAM

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Abstract

Skin maintenance has to start in the early years, respectively from puberty age, to prevent skin irritations, premature aging and to protect the skin from wrinkles even at an older age.

An important component in carrots, such as beta-carotene has a very good effect against skin aging because it has been observed from many studies that beta-carotene is a photo-protector with high affinity which prevents redness caused by rays UV thus preventing skin aging. Different forms of carrot such as carrot powder, carrot infusions, and carrot extract are commonly included in skin care products. Carrot extract is widely used in cosmetic products. The efficiency of the extract increases when the extraction is carried out in the cold using a vegetable oil as an extractant, thus preventing the degradation of the active ingredients if the extraction takes place under the influence of heat.

The purpose of this study was to realize the extraction of carrot roots as well as the use of this extract in the formulation of anti-aging cream. Carrot, burdock, parsley and beeswax have been used from the ancient times as herbal medicines as a mixture and alone as well. A good skin care product has a pH between 4.0-7.0 and the pH of the product we are going to present consists of a pH of 5.0 which makes this product perfect for interacting with the skin in the most natural way. Researches has shown that after two weeks of use, these ingredients show their efficiency by brightening and regenerating the skin, making the skin appear younger and healthier.

Keywords: extraction, carrot roots, anti-aging cream, formulation.

TREATMENT AND PREVENTION OF MENSTRUAL MIGRAINE: REVIEW

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Abstract

Migraines are one of the most common neurological disorders in the general population and affect about 18% of women and 6% of men. However, menstrual migraines are a type of migraine that cause a lot of difficulty for women who suffer from it, as they are less responsive to therapy and the attacks are longer than those not related to the menstrual cycle.

This scientific research aimed to investigate the most effective treatments for menstrual migraine and was carried out through a systematic review of the literature, using online databases such as PubMed, Cochrane Library and Web of Science. The following treatment options were evaluated: non-pharmacological therapies, pharmacological therapies and hormonal therapies.

In conclusion, pharmacological treatments are the most effective solution for menstrual migraine and triptans and NSAIDS are the preferred choice. However, non-pharmacological therapies and hormonal therapies should also be considered as additional options in the treatment of menstrual migraine.

Keywords: Menstrual migraine, Treatment, Therapy and Management.

DESCRIPTION OF ANTIBIOTICS IN ODONTOLOGY AND DENTISTRY

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Abstract

The use of antibiotics in dentistry and odontology varies from case to case. Generally, antibiotics should only be used when the infection is severe and has dangerous symptoms such as deep redness, pain, and inflammation. Antibiotics are also indicated for the treatment of patients with compromised immunity and for those who show obvious signs of infections and if the symptoms of the infection worsen rapidly.

The use of antibiotics in dental practice is mainly used in some cases such as: before cyst operations, open sinuses, during implant placement, apicoectomies, impactions, and extractions of teeth with periapical processes.

The purpose of this study was to determine in which cases of dental treatment antibiotics are used. The data was collected from patient records at the Uni-Dent dental practice. A total of 50 patients of different age groups without other comorbidities were studied. Of the 50 patients, 25 had periapical tooth extraction and were treated with cefixime, 18 patients had radicular cyst interventions and were treated with amoxicillin + clavulanic acid, and 7 patients had interventions of soft tissue cysts and were treated with amoxicillin + clavulanic acid. Our study corresponds to the data of many other authors. Antibiotic therapy is mandatory and essential in dentistry and

stomatology. From the results, we can conclude that in the aforementioned dental treatments, the group of beta- lactams and cephalosporins were effective and we recommend their use in the future in dental and stomatological practice, taking into account their side effects on the patient's health status and their irrational use.

Keywords: Antibiotics, inflammation, comorbidities, dental treatment.

CURRENT PRACTICE OF COMMUNITY PHARMACISTS FOR THE DISPOSAL OF MEDICATION WASTE

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Abstract

Expired medicines are a common household item that can pose a significant risk to public health and the environment if not disposed of properly. Pharmacists have been identified to play a crucial role in proper disposal of medications, take back programs, and helping patients understand the importance of proper medication disposal. Therefore, the study aimed to identify the current pharmaceutical disposal practices and assess any deficiencies in the pharmaceutical waste collection. A cross-sectional study was conducted among community pharmacists using a self-administered questionnaire. The participants were asked about their routine practice in collecting and disposing the pharmaceutical waste and their attitude towards legislation and drug pollution. Of the surveyed pharmacists ($n = 47$), most were female (78.7%) and worked in independent pharmacy (51.1%). Most pharmacists (66.0%) have the responsibility of taking decisions regarding the collection of expired/unused medicines and (61.7%) declare they take over expired/unused medications once per month. Nearly 24% agreed that the disposal of medications should be done through the Macedonian Agency for Medicines and Medical Equipment (MALMED). Almost half of the pharmacists consider themselves pretty informed about the waste disposal legislation and about the hazards these waste represent. This opinion was found to be strongly associated with the age of pharmacists ($P < 0.05$). The participation of all parties concerned in the health system and the

population as well, is needed in decreasing the quantity of pharmaceutical wastes which represent a considerable source of environmental pollution.

Keywords: Medication waste, medication disposal, expired/unused medicines, disposal legislation.

THE BENEFIT OF THE COMBINATION OF SIMVASTATIN AND METFORMIN THERAPY IN PATIENTS WITH DIABETES MELLITUS

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Abstract

Type 2 diabetes mellitus (T2DM) is the predominant form of diabetes, accounting for 90% of cases worldwide. It consists of a group of syndromes characterized by hyperglycemia; altered metabolism of lipids, carbohydrates and proteins; and an increased risk for complications from vascular disease. It is assumed that the factor responsible for the development of most complications of diabetes is the prolonged exposure of tissues to elevated glucose concentrations. Diabetes is an independent predictor of high risk for developing coronary heart disease. The incidence of these diseases is two to four times higher in diabetic patients compared to non-diabetics, and mortality from coronary heart disease is up to 100% higher in diabetic patients over a 6-year time period.

Glucose control is essential but provides only minimal benefit in relation to the prevention of coronary heart disease. Aggressive treatment of diabetic dyslipidemia through diet, weight control, and medications is crucial in reducing the risk. Since patients with type 2 diabetes have an increased risk of cardiovascular disease, they usually use combination therapy consisting of an antidiabetic drug, such as metformin, and a cholesterol-lowering statin. For research, the data of 40 patients of both gender and different age groups, who suffer

from type 2 diabetes and dyslipidemia, were used. These data were obtained from the state hospital in the city of Kicevo, as well as from the polyclinics located in its surroundings. Through this research, we aim to investigate whether the combined administration of metformin and simvastatin can achieve positive effects in the treatment of patients with hyperglycemia and prolonged diabetic dyslipidemia.

Keywords: diabetes mellitus, diabetic dyslipidemia, combined therapy.

THERAPY FOR EPIDERMOLYSIS BULLOSA SUBTYPES

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Abstract

Till today approximately 7000 rare genetic diseases. The number of people who are affected by rare genetic diseases is 350 million worldwide. Approximately 30% of these are children with these debilitating diseases who will not live to see their 5 th birthday. Approximately 80% of rare diseases are genetic and only 5% of rare diseases have an FDA approved drug, 50% of people affected by rare disease are children. EBs (epidermolysis bullousa) is a group of inherited skin diseases, with extremely fragile skin and recurrent blister formation „butterfly disease“, and more than 500,000 people worldwide are affected by Ebs (1/17,000). Till today are reported for the mutation of 16 proteins who are responsible for Ebs. Diagnosis is possible by skin biopsy. Treatment must be by banding to protect skin from friction and infection. There are three main types of Ebs: EB simplex who is identify at 50% of skin presons diagnosed by EBs; DEB (dystrophic epidermolysis bullosa) recesive and dominant; and Junctional epidermolysis Bullosa (JEBs) which is caused by sponntaneous mutation. Here we report for differnt subtypes and the different methodes used for cure of Ebs.

Keywords: Rare diseases; Genetic inheritance, Skin, Therapy.

THE SAFETY OF KETOPROFEN USAGE IN DIFFERENT AGE

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Abstract

Ketoprofen, an NSAID, functions by blocking the COX 1 and 2 enzymes involved in producing prostaglandins, which are messengers responsible for inflammation. All NSAIDs inhibit this enzyme, leading to a reduction in inflammation symptoms. In Calabria, 3.69% of ADRs reported in the National Network of Pharmacovigilance relate to ketoprofen usage, with hospitalization required in only one case of a patient below the age of 12 due to severe pancreatitis. Ketoprofen is the 6th drug in Italy for ADR incidence, with 560 ADRs reported in 2012, of which 31% are severe.

Although there is a high rate of spontaneous reporting, it must be noted that ketoprofen is one of the most commonly used NSAIDs. Therefore, like other frequently prescribed drugs (e.g., amoxicillin), the total number of ADRs should be considered in relation to its therapeutic use. However, the drug's safety in different ages and for vulnerable patients (such as children) remains a concern. This paper reviews the literature on the safety of ketoprofen in the elderly, children, and during pregnancy, presenting a retrospective study of ADRs reported in 2012.

Keywords: Adverse events, non-steroidal anti-inflammatory drug, pharmacovigilance, safety.

HEPATOTOXICITY AND HEPATOPROTECTIVE AGENTS TE PATIENTS WITH ACUTE DAMAGES TO LIVER FUNCTIONALITY

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Abstract

Liver disorders are serious health problems, the most common form that occurs in people of all ages. Drug-induced liver injury is a frequent differential diagnosis in patients with acute liver injury of no apparent etiology. To evaluate liver activity, parameters such as: measurement of transaminase activity, SGPT, SCOT, alkaline phosphatase, serum bilirubin, total serum proteins, albumin, globulin and prothrombin time. Based on the fact that most drugs, despite their therapeutic effect, also have a hepatotoxic effect. In our study, we will focus on drug groups that cause hepatotoxicity and hepatoprotective agents. According to the results obtained from the review of many studies, they can conclude that these groups of drugs cause hepatotoxicity such as: NSAIDs, Acetaminophen, Statins, Antibiotics such as amoxicillin-clavulanate, erythromycin, Methotrexate, azathioprine, Antifungal drugs, Steroids, Allopurinol, antiviral drugs, chemotherapy ETC. As a hepatoprotective agent, the following can be used: N-Acetylcysteine and Glutathione, Glycyrrhizin Acid, Polyene Phosphatidylcholine, Bicyclol, Anticholestatic Drugs, Ursodeoxycholic Acid, etc. According to the results, we can conclude that during the use of hepatotoxic drugs, withdrawal of the hepatotoxic agent can be done if it is possible or monitoring of the therapy can be done by following the biochemical parameters for the functioning of the liver and the introduction of hepatoprotective agents.

Keyword: Hepatotoxicity, hepatoprotective agents, liver.

COMPARISON OF THE EFFICIENCY OF MONOTHERAPY (DESLORATADIN) AND COMBINED THERAPY (DESLORATADINE WITH MONTELUKAST) IN THE TREATMENT OF ALLERGIC RHINITIS

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Abstract

Allergic rhinitis is an allergic response to certain foods or pollen, or other allergens. The allergic condition varies from person to person. It is usually characterized by allergic symptoms such as runny nose, sneezing, rash, watering, itching and swollen eyes. This study aims to compare the efficacy of desloratadine monotherapy and desloratadine combined therapy with montelukast in the quality of life of patients with allergic rhinitis. The data were obtained from the primary doctors from the files and from the anamnesis of patients diagnosed with allergic rhinitis. In total, 70 patients of different age groups who used desloratadine monotherapy for several years and are now being treated with desloratadine+montelukast combined therapy were investigated in the study. Out of a total of 70 patients, 42 patients have started using combined therapy, while 28 have not continued to use combined therapy due to economic conditions. According to the anamnesis, in 85% of the patients, a significant improvement of symptoms was observed in those who had used combined therapy compared to the period when they used monotherapy. In patients who did not continue with monotherapy due to their economic situation, we noticed that the improvement of symptoms in those patients is

smaller compared to those who continued with combined therapy. Based on the research, we can give these conclusions that the combined therapy was more efficient compared to the monotherapy in allergic youth. According to the results, we recommend that in the future allergic youth should be treated with the combined therapy of desloratadine+montelukast for the reason that they are combined together and have a synergistic effect in reducing symptoms and side effects with less.

Keywords: Allergic rhinitis, monotherapy, combined therapy.

SCIENTIFIC REVIEW REGARDING THE QUALITY, THERAPEUTIC USES AND LEGISLATION OF CANNABIS PREPARATIONS

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Abstract

The modern debate regarding cannabis preparations catapulted many scientific papers in an attempt to distinguish its characteristics and usage. The discovery of the endogenous cannabinoid system broadened the horizon and curiosity for more in-depth research of the cannabis plant. There is an increasingly exponential interest in the use of cannabis and its preparations for medical purposes. Through meticulous review, it's important to note that studying the qualitative properties with different instrumental methods can help minimize the risks that may arise from contamination and counterfeit products. Reaching the therapeutic goal of qualitative cannabis preparations comes with understanding the action potential through its own specific receptors within the human body. Positive therapy outcomes in different debilitating diseases, encouraged many medical professionals to suggest cannabis preparations as part of palliative care. Now as for the practical logistics of actually prescribing cannabis preparations, there is a strict legal framework of our country North Macedonia to abide by that it's worth mentioning. As of the year 2016, cannabis oil with a lower percentage of THC, respectively lower than 0.2 %, it's obtainable without a prescription. Whereas the other type of cannabis oil with a higher percentage of THC, that is higher than 0.2%, can be available only through medical prescription.

The legislative properties of cannabis preparations are discussed thoroughly in this paper, intersected with a mirror comparison between bigger countries such as the EU and US.

Keywords: medical cannabis, cannabis preparations, quality, medical uses, legislation.

HEATING NICOTINE MOLECULE IN DIFFERENT ATMOSPHERES – A MOLECULAR MODELLING PERSPECTIVE

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Abstract

In order to get an in-depth insight into the fate of nicotine molecule, when heated at different temperatures in different surroundings (i.e. different atmospheres), in the present study, this issue is tackled from the viewpoint of molecular modelling. Two approaches were implemented: static and dynamical one.

Within the dynamical approach, a series of ab initio molecular dynamics simulations of free nicotine molecule and nicotine in the presence of oxygen molecules in the singlet and triplet electronic states at series of different temperatures (covering the range from 600 to 1200 K) were performed. The atom-centered density matrix propagation scheme (ADMP) was used to sample the studied system's dynamics. Different levels of theory were implemented, basing on various combinations of exchange and correlation functionals and basis sets.

Within the static approach, the structure and interaction energies were studied for nicotine interacting with singlet and triplet oxygen molecules. Various electron density analysis schemes were

implemented (such as Bader and NCI analysis). On the basis of the simulation results, the possible degradation pathways which were implied by the generated molecular dynamics trajectories were related to the products detected in the smoke of conventional cigarettes and aerosols generated by electronic devices for controlled heating of tobacco. These questions are of fundamental importance to harm reduction when inhaling the aerosols of different tobacco products.

Keywords: (nicotine, conventional cigarettes, heated tobacco products, combustion).

**5th International Conference of Natural Sciences and
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BIOLOGY AND ECOLOGY

THE EFFECT OF AMINOLEVULINIC ACID (AAL) ON THE ACTIVITY OF THE ENZYME δ -AMINOLEVULINIC ACID DEHYDRATASE (D-AAL), AS A CAUSE OF ENVIRONMENTAL POLLUTION WITH LEAD (PB), IN THE URBAN PIGEON (COLUMBA LIVIA F. URBANA)

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Abstract

The purpose of this study is to explain the retrospective reflection of environmental pollution with lead (Pb), emitted for several decades by the Trepça Lead and Zinc smelter in the Republic of Kosova, in some biochemical-physiological parameters, in the urban pigeon (*Columba livia f. urbana*), such as the level of δ -aminolevulinic acid (AAL) which has a direct influence on the activity of the enzyme δ -aminolevulinic acid dehydratase (D-AAL).

The level of lead in the blood of pigeons in Mitrovica was significantly ($P < 0.001$) higher compared to its level in control samples in the village of Lukij in Prizren. On the other hand, the level of Aminolevulinic acid (AAL) as well as the activity of the enzyme Dehydratase of δ -aminolevulinic acid (D-AAL), in pigeons in Mitrovica, were significantly ($P < 0.001$), lower, compared to their level in the control group in Lukija.

The conclusion of this study is that the pollution of the environment with Lead (Pb), and especially its accumulation in the body, has a negative effect on these biochemical-physiological parameters, which results in a decrease in the level of Aminolevulinic acid (AAL), with a direct effect on inhibiting the activity of its enzyme, δ -aminolevulinic acid dehydratase (D-AAL).

Keywords: Lead (Pb), Aminolevulinic acid (AAL), Dehydratase of δ -aminolevulinic acid (D-AAL), Mitrovica, Lukija.

**DETERMINATION OF SOME SPECIES OF THE
GENUS ACER L. (ACERACEAE), WIDESPREAD
IN SHAR MOUNTAIN, IN NORTH MACEDONIA,
BASED ON THEIR BUDS**

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Abstract

This study is based on the research of the morphological differences of the buds of the three most widespread species of the genus *Acer* L. (Aceraceae) in Shar Mountain, in Republic of North Macedonia: *Acer campestre* L., *Acer platanoides* L. and *Acer pseudoplatanus* L. This method is important for the determination of these species, in the period of leaf fall and before their flowering.

Keywords: *Acer* sp., buds, North Macedonia.

THE ADVANTAGES OF FORMATIVE ASSESSMENT VERSUS SUMMATIVE ASSESMENT IN THE CURRICULUM WITH COMPENTENCIES

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Abstract

If we talk about quality education, we cannot leave without mentioning the assessment of students. Until recently, classroom assessment has been considered as a mechanism to test students' knowledge and to judge their achievements based on those tests. In the competency-based curriculum, student assessment is a complex process between traditional (summative assessment) and innovation (formative assessment). Competency-based teaching focuses on the student and his evaluation, as an integral part of teaching and learning, should serve to prepare him with the necessary competencies required by the 21st century. This study was based on questionnaires, which include representatives from students and teachers of public schools of Higher Secondary Education. The results show that formative assessment affects the encouragement of students throughout the lesson, identifies aspects that need to be improved, helps the student to self-correct, and enables personalized teaching.

Keywords: quality education, formative assessment, summative assessment, curriculum with competencies.

PREVALENCE OF HYPERTHYROIDISM IN THE STRUGA REGION

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Abstract

Hyperthyroidism is a common thyroid disorder and this disease characterized by increased thyroid hormone synthesis and secretion from the thyroid gland, whereas thyrotoxicosis refers to the clinical syndrome of excess circulating thyroid hormones, irrespective of the source. Hyperthyroidism can be overt or subclinical. Overt hyperthyroidism is defined as low or suppressed thyroid stimulating hormone (TSH) levels with elevated triiodothyronine (T3) levels and/or elevated thyroxine (T4) levels. The most common cause of hyperthyroidism is Graves' disease, followed by toxic nodular goiter. Other important causes of thyrotoxicosis include thyroiditis, iodine-induced and drug-induced thyroid dysfunction, and factitious ingestion of excess thyroid hormones. The aim of this research was to understand the prevalence of hyperthyroidism in Struga and its surroundings during the years 2021 and 2022, as well as the most affected genders and age groups. The disease data were provided by the Struga General Hospital and the diagnosis was performed by electrochemiluminescence immunoassay (ECLIA). From 5442 controlled samples, 134 (2.46%) of them were diagnosed with hyperthyroidism. The prevalence of hyperthyroidism in the female gender was 1.77% and 0.62% in the male gender, while the age groups 20-40 and 40-60 years were more affected. Hyperthyroidism increases with age and is more frequent in women.

Keywords: Hyperthyroidism, thyroid hormone, Graves' disease, prevalence, triiodothyronine (T3), thyroxine (T4).

COMPARATIVE OVERVIEW OF THE NUTRITIONAL PROPERTIES AT RICE (ORYZA SATIVA L.) LANDRACES HULLED AND UNHUSKED GRAINS (PARBOILED)

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Abstract

Dietary regimens that are part of everyday life and habits of modern life require the inclusion of cereals with the highest percentage of vegetable fiber. Long-term digestion allows for a longer period of satiety with sufficient nutrition of the intestinal microflora, for which plant fibers are a prebiotic. Hulled grain diet means the rapid utilization of carbohydrates, rapid feeling of hunger, insufficient energy until the next meal and elevation of glycemia in the blood. Rice is daily present in the human diet and its inclusion should be as unhusked (parboiled) due to vegetable fibers and a balanced meal. This research includes 10 landraces from the surroundings of the largest rice-producing region of Kočani, collected 2020-2022 from local producers. Laboratory analyzes have shown significant differences in the nutritional properties of hulled and unhusked rice. Hygroscopic moisture was measured 30 days after harvest and ranged from 14.43-16.40% in hulled rice grains, where starch content was high at 62.57-73.65%, plant fiber from 2.6 to 3.06%, and total organic matter ranged from 89.99-92.19 %. In unhusked rice grains, the hygroscopic moisture is represented from 13.23 to 15.82 %, the starch significantly less compared to the hulled grains 59.23-66.29 %, and

the organic matter from 84.49 to 94.35 %. Proteins are represented from 11.70 to 13.40 % and together with fats (0.4-0.9 %) were examined only in unhusked rice grains, because their content is unchanged and does not depend on the representation of vegetable fibers. The total mineral component is presented as ash, which is in a higher content 10.01 % found in the husked rice compared to the unhusked 7.64 %. According to the obtained results, it is recommended to use unhusked rice in the diet, especially during periods when antibiotics are taken, as well as in people who have "lazy" intestines.

Keywords: *Oryza sativa* L., landraces, nutritional properties, hulled grains, unhusked grains.

THE STUDY OF THE MACROFAUNA OF BENTHIC INVERTEBRATES OF THE MOUNTAIN LAKES OF SHARR IN THE REPUBLIC OF NORTH MACEDONIA

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Abstract

Aquatic ecosystems belong to the most sensitive group of living environments, which are under the great influence of the anthropogenic factor, and precisely for this reason, research and determination of the diversity of animal species are quite important in these lentic ecosystems (lakes). In addition to abiotic indicators (physico-chemical conditions), the state of each aquatic ecosystem is monitored through certain types or groups of so-called bioindicators.

The research of aquatic macroinvertebrates as bioindicators in rivers, lakes, and reservoirs is not only of scientific importance but is also important for the management and conservation of aquatic ecosystems. Our research carried out in the two mountain lakes of Sharr during the summer (July 2022/23) and autumn (October 2022/23), resulted in the identification of three zoological groups (Annelida, Mollusca, Hexapoda) of benthic macroinvertebrates.

From a total of 36 individuals collected from the upper lake of Karanikolla, 6 families of benthic macroinvertebrates from the

Mollusca and Hexapoda groups were identified. The family Physidae was represented by 28%, the family Gyrinidae by 22%, the family Corixidae by 17%, the family Simuliidae by 14%, the family Limnephiliidae by 11%, and the family Gerridae by 8%. From Lake Bogovina, 8 families of benthic macroinvertebrates belonging to the groups Annelida, Mollusca, and Hexapoda were identified from the 31 individuals collected. The family Glossiphoniidae was represented by 22%, the family Gyrinidae by 19%, the family Lumbricidae by 17%, the family Corixidae by 11%, the family Simuliidae by 8%, the family Perlodidae by 6% and the family Chironomidae by 3%.

The results obtained from this study add to the knowledge of the macrofauna of aquatic invertebrates of the mountain lakes of Sharr in the territory of North Macedonia and we hope that will serve as a basis for further researches.

Keywords: lentic ecosystems, bioindicators, macrofauna, benthic macroinvertebrates.

SEROEPIDEMIOLOGICAL STUDY OF SARS-COV-2 INFECTION IN THE TETOVA REGION, NORTH MACEDONIA

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Abstract

Coronavirus disease 2019 (COVID-19) caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) has led to a global pandemic, including North Macedonia. However, there are only limited data regarding the precise prevalence of the COVID-19 pandemic in North Macedonia. Here, to estimate the magnitude of SARS-CoV-2 infection in Tetova region, North Macedonia, we investigated the prevalence of immunoglobulins G (IgG and IgM) antibodies. The detection of IgM and IgG immunoglobulins was performed through the Ichroma II serological test, in the Laor laboratory in Tetova. We enrolled 1,582 individuals from June to December 2020 and January to June 2021 observed that the subjects' overall prevalence of IgG antibodies to SARS-CoV-2, for the female gender, it was 661 cases (42%), while for the male gender there were 921 immunized cases (58%). The highest prevalence among age groups was in the 20-40-year-olds, during 2020 (313 immunized persons), while during 2021, the age group 40-60 years had the highest prevalence (383 immunized persons), and the lowest prevalence was in the age group 0-20 years, for both years. Also, the younger population has shown less susceptibility to the disease. In conclusion, the COVID-19 outbreak among asymptomatic populations was characterized by a high prevalence of infection in Tetova region.

Keywords: Coronavirus, SARS-CoV-2, immunoglobulins G (IgG and IgM), immunized, prevalence.

ETHNOBOTANY OF LOCAL PEOPLE IN GLOBOÇIÇË (REPUBLIC OF KOSOVO)

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Abstract

During the last few decades, the traditional botanical knowledge (TBK) in the Sharr Mountains has received limited attention from researchers. Nevertheless, their efforts have been successful in documenting the interactions between the local people and their natural resources. However, in certain areas, TBK still remains undocumented. Therefore, this study aimed to investigate the relationship between the local inhabitants of Gllloboçica (Republic of Kosovo) and their local flora. Semi-structured interviews were conducted in January-February 2023 with 13 Albanian local residents with empirical knowledge, comprising 9 women and 4 men, aged over 45 years. During this period, information was gathered on more than 53 plant species belonging to 26 families used in traditional medicine. The most commonly used families were Rosaceae, Lamiaceae, and Asteraceae. Decoction, which is a hot aqueous extract, is the most dominant form of medicine, in accordance with the cultural reality and local biodiversity. Furthermore, the migration of local residents and the lack of vertical transmission of traditional knowledge are the two main factors that have led to the violation of cultural integrity.

Keywords: Ethnobotany, Kosovo, Traditional medicine.

THE TRADITIONAL ETHNOBOTANICAL PHYTO-RECIPES USED BY LOCAL PEOPLE IN XHEPÇISHTË AND POROJ (REPUBLIC OF NORTH MACEDONIA)

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Abstract

Within the discipline of ethnobotany, numerous significant discoveries have been made that have altered the course of human interaction with nature. Locally, ethnobotany plays a crucial role in studying bio-cultural traditional systems, socio-economic and practical importance, and the conservation of local biodiversity. Our hypothesis was that women possess more knowledge regarding traditional phyto-recipes than men. To test this hypothesis, an ethnobotanical survey was conducted via semi-structured and in-depth interviews with individuals aged 30-60 years from two major neighborhoods (Cuce and Mujdin Aliu) during January-February 2023. A total of 39 plant species belonging to 25 families were reported. The results indicated that herbs were the most dominant life form (62%), followed by trees (18%) and shrubs (15%). All of these medicinal and aromatic plants (MAPs) are employed to cure more than 20 ailments and can be found within the study area. This survey demonstrated that, despite the gradual decline of traditional knowledge, many traditional phyto-recipes continue to be employed.

Keywords: Ethnobotany, Xhepçishtë, Poroj, Phyto-recipes.

THE GENETIC BASIS OF AUTISM SPECTRUM DISORDERS, TETOVO STUDY CASE

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Abstract

Autism Spectrum Disorder (ASD) is a long term used to describe people who have a special neurodevelopmental condition that causes hardships in their social abilities, communication, and behaviors. Since 1977 when it was first discovered that genes contribute to the manifestation of this heterogeneous condition, the epicenter of a lot of research has been and still is the discovery of that basis that contributes to the manifestation of Autism. Over the past decade, genomic technologies have enabled rapid progress in the identification of risk genes for ASD. In our country, there is still indecision as to what are the causes that affect Autism and the purpose of this paper is to document that. Autism Spectrum Disorder (ASD) has a strong and complex genetic component, with multiple familial inheritance patterns and an estimated of up to 1000 genes potentially implicated. The realization of this research is based on the quantitative method, through questionnaires made for the parents of children diagnosed with ASD, and the literature survey method through which we've used topic, scientific and professional researches in the genetics field.

Keywords: Autism spectrum disorders, ASD, genetics, genes, heritability.

DATA OVER FAUNA OF INVERTEBRATES ON SHARR MOUNTAIN – REPUBLIC OF NORTH MACEDONIA

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Abstract

Fauna diversity in North Macedonia is represented by 13.447 species (Hristovski et al. 2015). 602 of these species are endemics, representing 4.47% of the overall fauna.

Based on investigation of literature data over fauna of invertebrates on Sharr Mountain we have made lists of present taxa. The lists are supplemented with data from our own fauna research aided with the Project "Cooperative trans-boundary learning for ecosystem management and sustainable development in the Sharr Mountain region", which was financially been supported by IPA Project /2015/375-980.

Our analyses show that from the fauna point of view Sharr Mountain Region is characterized with enormous diversity. Beautiful, rich and diverse ambient, presence of countless vegetation communities and diversity of biotopes have conditioned the appearance and attendance of abundant and diverse animal world. Many endemic species of organisms can be found within Sharr Mountain region, especially in the world of insects.

Total numbers of registered taxa Invertebrates on Sharr Mountain are 2454, which represented 18.25% from Macedonian fauna, 90 taxa of them are endemic, which is 14.95% of Macedonian endemic Invertebrates fauna, Macedonian endemic are 14 species; Balkan endemic 72; 4 sub-endemic (Balkan and Apennine Peninsula); 2

species are on Habitat Directive Annex V and 2 are on Cites list. Butterflies (Lepidoptera: Rhopalocera) which are on IUCN Red List (Vu 5 species; Nt 27 species). On Habitat directive are 8 species and 3 species are Target.

Keywords: Fauna diversity, Sharr Mountain, North Macedonia, endemic.

THE IMPACT OF AGE ON THE LEVEL OF VITAMIN B12 DURING DIFFERENT PERIODS OF THE YEAR IN THE POPULATION OF POLLOG REGION

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Abstract

Vitamin B12 or cobalamin is a vitamin that is part of the group of water-soluble vitamins, derived from animal products such as red meat, dairy and eggs. The most used marker is total vitamin B12, which measures the level of vitamin B12 bound to transport proteins, which gives an overall assessment of the status of vitamin B12 in the blood. The purpose of this study is to determine the variations of vitamin B12 including all ages during different periods of time within a year, to examine the risk of the deficit of this vitamin in the population living in the region of Pollog. Data collection was carried out in the period January-December, 2021, in the Diagnostic Biochemistry Laboratory of the Clinical Hospital of Tetovo. This study included a total of 352 subjects of both genders with female dominance. The concentration of vitamin B12 (cobalamin) was determined using the DCLIA method. From the results obtained from this study, it appears that the population living in the region of Pollog is not at risk of vitamin B12 deficiency, because the mean values obtained during the study in all time periods are with satisfactory results within normal limits.

Keywords: vitamin B12, cobalamin, DCLIA, Pollog region.

THE EFFECT OF SHARRI MOUNTAIN TEAS ON DIFFERENT STAGES OF EMBRYONIC DEVELOPMENT IN QUAIL AND CHICKEN EGGS

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Abstract

The mountain massiff of Sharri is considered one of the largest mountain ranges with special geographical characteristics and an expressed biological diversity, with a special endemism and a wide spectrum of flora and fauna characteristic of this mountain massiff.

Also, Mount Sharr is characterized by plant species of special importance and variety, both from the presence and the spectrum of the biological character, but also from the spectrum of the nutritional and health character. In the context of teas with nutritional character and health benefits, we can count species such as: mint (*Mentha piperita*), St. John's wort (*Hypericum perforatum*), sideritis (*Sideritis scardica*), and chamomile (*Matricaria camomila*), etc. These mountain products can be considered as bioproducts of particular importance both in terms of presence, quality and health benefits, therefore the exploration of these species would have a positive cost for consumption as a form of teas or plant extracts for commercial purposes but also for health benefits and above all for the population of the country, the wider region.

The use of these teas is known even in ancient times by the local population, but recently there are data on the medicinal character of these teas as a form of herbal supplements with a healing character.

The effect of the extract of these teas has been studied on quail eggs *Coturnix japonica*, and on chicken eggs *Gallus domestica*, applying extract with a certain dose to quail and chicken eggs, at different stages of embryonic development during ontogenesis. This paper aims to investigate the effect of the herbal extract of mint (*Mentha piperita*), St. John's wort (*Hypericum perforatum*), sideritis (*Sideritis scardica*), and chamomile (*Matricaria camomila*) teas, applying the extract at a certain dose to quail eggs. and chicken, at different stages of embryonic development during ontogenesis.

The dose given in extract form has resulted in macroscopic histopathological changes up to the phenomenon of teratogenesis during application at certain stages with certain doses of embryonic development.

This research aims to explore the effect of the given dose of plant extracts on certain stages of embryo development during ontogenesis and to see the benefits or consequences of taking the dose in a certain amount and at a certain time to observe macroscopic histo changes pathological.

Keyword: Tea Mountain, chicken eggs, histopatology, ekstrakt of tea, *gallus domestica*.

SARS-COV-19 INFECTION IN THE KAMENICA REGION, KOSOVO

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Abstract

The COVID-19 pandemic caused by SARS-CoV-2 has affected millions of people worldwide, including the population of Kosovo. Between the years 2019 and 2021, the COVID-19 pandemic brought on by SARS-CoV-2 spread quickly in Kosovo, greatly increasing the number of cases. Effective prevention and control measures rely on the virus being detected as early and accurately as possible. Using RT-PCR technique, this study aimed to identify the the presence of SARS-CoV-2 non-specific sequences, and the increasing number of cases trend in 2021 from January to April in a specific rural region of Kosovo called Kamenica, which is home to many minority groups. The region has faced limited access to healthcare during COVID-19 pandemic, which has highlighted the need for increased support, and the significant importance of such studies to be conducted. According to the data analyzed by The National Institute of Public Health of Kosovo (IKShPK), the number of COVID-19 cases in Kamenica showed fluctuations between January and May. Our study also highlighted the significant impact of vaccination in the prevention of the disease. The data revealed a marked decrease in the level of infections by 83% in May compared to previous months, indicating the effectiveness of vaccination in controlling the spread of the virus. This study emphasizes the significance of ongoing SARS-CoV-2 surveillance in the population, particularly in rural populations, and the requirement for public health authorities and policymakers to give priority to the requirements of these communities. To stop the virus from spreading further in Kamenica and other vulnerable areas of

Kosovo, it is crucial to identify it early and put control measures, such as vaccination campaigns, informative open training for people to get educated, and improved access to healthcare.

Keywords: Coronavirus, SARS-CoV-19, infection, vaccination, Kamenica, RT-PCR technique.

ASSESSMENT OF WATER QUALITY, THROUGH MICROBIOLOGICAL AND PHYSIC-CHEMICAL ANALYSIS OF DUKATI STREAM, VLORE ALBANIA

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Abstract

Water pollution is a global concern in urban and rural communities. Water is important in ecological and social aspects. The monitoring of local water sources is important for water quality assessment. Water pollutants have anthropogenic and natural origin. Fecal coliform bacteria are the main bioindicator for water quality. The high level of fecal coliforms can affect aquatic biodiversity but also can be a health risk to humans. In this study we make an assessment for water quality of Dukati stream, in Vlora city, Albania. Water stream is used for agricultural, animal farming and manufacture of inert material in some points. Our study focuses on the microbiological and physico-chemical analysis of the Ducati stream. This study was conducted from January 2021 to December 2021. Water samples were collected in eight different station points. The monitoring of water quality was made every month, for each season. Microbiological monitoring for fecal coliforms was made using MPN methods. Physico-chemical analysis is based on the standard method for water quality. Station six and eight have the highest level of fecal contamination. These stations are near inhabitant areas and in the stream delta. Fecal pollution has a seasonal variation. Temperature seems to affect the increase of bacterial contamination. This result corresponds with a high level of

anthropogenic factors in these sites. Based on these results, periodic monitoring can improve the water quality management.

Keywords: Pollutant, water quality, fecal coliform, anthropogenic factor.

EVALUATION OF SEA WATER QUALITY ALONG THE COASTLINE OF SOUTH ADRIATIC, ALBANIA

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Abstract

Introduction: Coastal tourism has a great role in the Albanian economy. In recent years, there is an increase in public awareness of sea water quality. Beach water quality is affected by point source (such as sewage outfalls) and nonpoint source of contamination (such as storm water runoff, sand resuspension, animal fecal inputs, and human bather shedding). Contaminated sea water could cause several health consequences for beach users. International regulations usually assess water quality by the quantification of fecal indicator bacteria. The aim of this study was to evaluate the seawater quality in eight beaches along the Southern Adriatic. **Settings and Design:** Were performed, microbiological and physic-chemical analysis of recreation seawater. Water samples were taken monthly from January to December 2021 in eight stations eventually distributed on this coast line. **Methods and Material:** Fecal bacteria is determined using MPN techniques and EC media, while physic-chemical parameters are estimated using standard methods. **Results:** High values of coliform bacteria were observed in four sampling stations, beaches classified as: urban, near harbors and near delta river. **Conclusions:** According to the obtained data, monitoring programs have to be focused especially in urban areas and in touristic beaches sites. This could enhance microbiological water quality and consequently, beachgoers safety and touristic beach attractiveness to international visitors. **Keywords:** Indicator bacteria, seawater quality, physic-chemical parameters, MPN techniques.

ECOLOGICAL CONSIDERATION OF BENTHIC MACROINVERTEBRATES OF SHUSHICA RIVER, ALBANIA

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Abstract

According to the Water Framework Directive (WFD, 2000), the biological monitoring of Albanian rivers through the use of benthic macroinvertebrates is considered an accurate method in assessing the status of the aquatic ecosystem. The purpose of this study was to evaluate the distribution of the populations of benthic macroinvertebrates found in the Shushice River (Vloa river) by calculating constant and frequency. The sampling technique was Kick-net with specific mesh 500 micron. Sampling was carried out during the year 2019. A total of 481 individuals were collected at four sampling stations, which belong to 28 families of the Insect class and the Oligochaeta subclass. The families Hydropsychidae, Chironomidae and Thaumaleidae are represented with Euconstant distribution (Ec) (C=100%). Families, Ephemeroidea (Ephemeroptera), Capnidae (Plecoptera), Ceratopogonidae (Diptera), and Lumbricidae (Haplotaxidae) represents with Constant distribution (C). Meanwhile there are twenty families classified as Associated (AS) and 1 family with Random Distribution (R). In the 1-st station, the family with the highest value of frequency represents family Cordulegastroidea (Odonata) (D=24%; Ed), in the 2-th station the families Chironomidae (Diptera) and the Lumbricidae

(Haplotaxidae) (D=31.9%; Ed), In the 3 -rd station family Lumbricidae (Haplotaxidae) (D=31.4%; Ed) and in the 4 -th station the family Chironomidae (Diptera) (D=14.8%; Ed). It is obvious that the order Diptera has a high distribution in all the sampling stations and its families also represent a high number of individuals. This can explain, with their moderate pollution tolerance values. At the end of this study we can say the Shushica river has a high degree of biodiversity.

Keywords: Shushice river, constant, diptera, benthic macroinvertebrate.

SOIL TYPE CLASSIFICATION WITH THE CHARACTERISTIC VECTOR ANALYSIS (CVA) METHOD FOR FORENSIC PURPOSES

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Abstract

Soil is a substance that consists of inorganic and organic matter, its composition allows traces of soil to be used as evidence.

In many cases, the perpetrators of the crime, in order to lose their tracks, burn the space where the crime took place, for this reason it is necessary to analyze the soil before and after the burning. In this paper, 80 soil samples taken in five (4x4 samples) locations in the city of Tetovo were analyzed, all samples were first dried at a temperature of 110 °C in an interval of 60 minutes. Then all the samples using the gravimetric method were burned at a temperature of 430°C in an interval of 90 minutes, then the dried and burned samples were recorded with the infrared spectrophotometer. The data obtained by IR spectroscopy were analyzed using the characteristic analysis vectors (CAV), from the obtained results it can be observed that the first three characteristic vectors (CV 1 , CV 2 , CV 3) contain about 85% of the information found in the IR spectra. This means that by looking at the graphs that are obtained only on the basis of these three vectors, to the greatest extent, it is possible to see how well the samples from the different locations are discriminated.

Keywords: Soil, Forensic, IR spectroscopy, characteristic vectors.

TOTAL PROTEIN AMOUNT IN THE LIVER OF THE FROG (RANA RIDIBUNDA) IN THE SITNICA RIVER

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Abstract

The environment, in some ways, represents the organisms themselves, which are in constant contact with the environment from birth to death, receiving all of the elements required for life. In a nutshell, we exist because the environment does. As a result, the conditions of the environment in which an organism lives determine its life. As a result, we can conclude that every organism's metabolism is influenced by its living environment. In the case of aquatic organisms, it is obvious that water represents the environment, which modifies the metabolism of the organisms that live in it through physical and chemical factors. Amphibians are organisms that spend their lives in two environments: aquatic and terrestrial.

Polluted waters can have a variety of effects on the physiology of these organisms. As a result, the total amount of proteins in the frog *Rana radibunda* in the river Sitnica, which has a fairly high level of contamination, was used as a reference in this study. This study was carried out in the environmental protection laboratories of the Department of Biology, Faculty of Mathematical and Natural Sciences in Pristina, with the goal of determining the effect of pollution on the total amount of proteins in individuals of the frog population (*Rana radibunda*) based on a polluted locality and a test locality. The research was done on the individuals of the natural

population of the frog (*Rana ridibunda*), specifically in their liver. These individuals (ten in total for each locality) were caught in the rivers Sitnica (industrial pollution) and Henc Wetland (control) and were of different sexes, some males and some females. The frog (*Rana ridibunda*) belongs to the family Ranidae and the order Anura of the class Amphibia. The total protein content of the liver is an important parameter to consider when analyzing the synthetic function. As a result of this study, related to the impact of pollution on the liver of a young frog-*Rana ridibunda* in the river Sitnica, compared to the control, it was found: The lower amount of total protein.

Keywords: FROG, HENC, POLLUTION, PROTEIN, SITNICA.

ALIENS IN ALBANIA —WHICH, WHEN, WHERE, WHY? A CHRONOLOGICAL ANALYSIS OF THE INVASION OF ALIEN SPECIES IN THE ALBANIAN, IONIAN AND ADRIATIC COASTS

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Abstract

The Albanian part of the Adriatic and Ionian Sea covers almost 316K of coasts, about 40% of the Albanian territory. This means that monitoring for changes in marine ecosystems and conserving biodiversity are of great importance. Following the invasion of the Mediterranean seas by alien species and the extension of the distribution area of some species in other sub-regions forces the need for constant monitoring of the non-indigenous marine fauna of Albania. This paper provides a list of species introduced into Albanian waters in recent years. A total of 54 species reported from 1978 until 2023 in the waters of the Ionian and Adriatic of Albania. Among them: Foraminifera 2; Algae 7 species; Mollusca 17; Annelid 2; Arthropoda 5; Bryozoa 2; Tunicate 3 and Vertebrata 16.

Most of these species are thermophilic species with origins from the Suez Canal. The main factors of the transport and distribution of these species are related to sea routes and the presence of aquaculture. The greatest number of species reported is in two of the major ports of Albania: the port of Durres and Vlora Bay.

Keywords: Alien species; range expansion Albania, Adriatic Sea, Mediterranean Sea, Ionian sea.

AMPHIPOD COMMUNITY ASSOCIATED TO CANOPY-FORMING ALGAE STRUCTURE AND SPATIAL VARIABILITY OF CRUSTACEA: AMPHIPODA IN CYSTOSEIRA SENSU LATO ASSEMBLAGES

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Abstract

In the Mediterranean Sea, the canopy forming algae formerly belonging to the genus *Cystoseira sensu lato*, are the most important algal canopy-forming underwater forests. Given the importance of these canopy form algae and the habitat they constitute, it is important to know the species that these algae are associated with. A study was conducted to investigate the amphipod species associated with four species of *Cystoseira sensu lato* overo *Cystoseira compressa*, *Ericaria crinita* and *E. amentacea* and *Gongolaria barbata*, near Vlora Bay, Southern Albania. The samples collected in the spring and autumn of 2021. In 4 different algal species of the genus *Cystoseira sensu lato*, 1448 individuals were collected in two sampling seasons (965 in spring and 483 in autumn), belonging to 52 Amphipoda species. An attempt to study the spatiotemporal variability and faunal composition of each alga has been made. In addition, the Bray – Curtis Similarity index was calculated to compare the distance between the four species of canopy forming algae. According to the frequency analysis it emerges that on average there are only one or two species that populate these algae with greater frequency (more

than 30% of total sample), instead the other species of amphipods occur with a minimum frequency of less than 5% of the sample. However, the composition of dominant species in each algal species is different.

Keywords: Cystoseira sensu lato; Ericaria; Gongolaria; spatial scales; biodiversity; amphipoda; Mediterranean Sea; Albania.

GENETIC POLYMORPHISM OF TEN MICROSATELLITE LOCI IN DURUM WHEAT GENOTYPES

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Abstract

The purpose of this study was to investigate the genetic polymorphism of ten microsatellites loci in durum wheat genotypes. Samples were collected from 25 durum wheat genotypes from Macedonia. After DNA extraction, the fragments related to molecular gwm294, wmc264, cfd15, barc151, barc84, gwm257, wmc89, gwm408, cfd65 and gwm642 were obtained by polymerase chain reaction (PCR). Each cultivar was shown to have a unique allele combination. The statistical analysis were were performed using the statistical software XLSTAT (Version 2015.5.01.22537). The allelic and genotypic frequencies, deviations from Hardy-Weinberg equilibrium, estimates of observed (HO) and expected (HE) heterozygosity and polymorphic information content (PIC) were obtained for each marker locus. A total of 40 alleles from 10 loci were obtained, with sizes ranging of 67 to 249 base pairs. The mean number of alleles per locus was 4,3 the HE was 0.76 ± 0.14 , HO was 0.49 ± 0.21 and PIC was 0.706. Each cultivar was shown to have a unique allele combination. This allows microsatellite markers to be used to identify durum wheat varieties. Analysed microsatellite markers were polymorphic and demonstrated the power of these markers for detecting diversity among durum wheat genotypes. In the

semi-arid region of Saudi Arabia. Thus, study provides insights into genetic variability of durum wheat population investigated, which makes them an important genetic resource for future wheat breeding programs.

Keywords: Genetic polymorphism, microsatellites, wheat, molecular, genetic variability.

CARCINUS AESTUARIII AS BIO- INDICATOR OF ESTUARINE ECOSYSTEMS HEALTH

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Abstract

There are several organisms serving as biological indicators for assessing various ecosystems' health. Different chemical compounds found in environment such as copper, chloroform and adrenaline can induce to the crustaceans an adaptive response by producing more Crustacean Hyperglycemic Hormone (CHH) by the X organ and sinus gland (XO-SG) complex located in the eyestalks. Even though the above-mentioned chemical compounds provoke stress in the species organism, the abiotic factors have the same effects too. They both are able to increase the hemolymph glucose level, affect the total hemocyte count (THC), the differential hemocyte count (DHC), and cause the destabilization of the lysosome membrane (decrease of NRRT, $p < 0.05$). In long-term, stressors will adversely impact the *C. aestuarii* health, compromise reproduction and general population health of this species. The Crustacean Hyperglycemic Hormone (CHH) is a proteinic hormone which intermediates the whole physiological process in the molecular level. It represents an open reading frame sequence of 429 base pairs, responsible for the coding of a 142-aminoacid protein with a signaling peptide of 26 amino acids, followed by a peptide attached to the CHH precursor of 40 amino-acids, and the mature peptide of 72 amino acids and it results by the first determination based on a high similarity (98.6%) with the

CHH peptide from *C. maenas* compared with CHHs from Brachyura infraorder.

Keywords: *Carcinus aestuarii*, estuarine ecosystems health, Crustacean Hyperglycaemic Hormone (CHH), Haemolymph Glucose Level, Crustacean Hyperglycaemic Precursor Related Peptide (CPRP), PCR, HPLC Chromatography.

MEDICINAL PLANT DIVERSITY BETWEEN INTERCULTURAL AND CROSS-CULTURAL ETHNOBOTANY IN PODGORCA AND LABUNISHTË (THE REPUBLIC OF NORTH MACEDONIA)

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Abstract

Contemporary societies worldwide are grappling with the intricate interplay between subcultures and globalization, which poses a substantial challenge. Effectively addressing this issue requires confronting the obstacles associated with fragmentation and segmentation. An intercultural research approach involves examining how individuals from diverse cultures perceive a given phenomenon or issue, while a cross-cultural research approach aims to compare and contrast how different cultures view and respond to the same phenomenon or issue. It is critical to recognize and respect cultural distinctions and subtleties in both approaches to avoid biases and inaccuracies in research findings. The villages of Labunishtë and Podgorci were selected to provide an ideal opportunity to conduct this study. The research was conducted between January 7th and February 1st, 2023, and involved interviewing nine individuals, including five females and four males. The study area is rich in medicinal and aromatic plants (MAPs), which are employed to treat more than 20 different ailments. A total of 15 plant species belonging to nine families were identified, with herbs being the dominant life form (80%), followed by trees (15%) and shrubs (5%). Despite the gradual erosion of traditional knowledge, the survey revealed that a significant number of traditional phyto-recipes are still being employed.

Keywords: Ethnobotany, Podgorca, Labunishtë, Phyto-recipes.

COMPUTER SCIENCE

DIFFERENCES IN PRODUCTIVITY WITH SCRUM AND KANBAN: A COMPARATIVE STUDY

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Abstract

In recent years, agile methodologies such as Scrum and Kanban have gained significant popularity in the software development industry. Both Scrum and Kanban are widely used for managing software development projects, but they have different approaches to project management. Scrum is a framework that emphasizes teamwork, collaboration, and iterative development, while Kanban is a lean approach that emphasizes continuous delivery and visualizing work in progress. The purpose of this research paper is to compare the productivity of Scrum and Kanban methodologies in software development projects.

Keywords: Kanban, Scrum, comparison, software developments.

STEM EDUCATION AND HIGH SCHOOL STUDENTS' ATTITUDES, CAREER PERCEPTIONS AND INTEREST IN INFORMATION TECHNOLOGY FIELDS

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Abstract

STEM jobs have become increasingly important in the labor market over the past few decades, and they are widely considered to be some of the most important jobs for the future. This is due to the fact that advances in technology have revolutionized many industries, and STEM professionals are needed to develop and implement new technologies, as well as to maintain and improve existing ones.

This survey conducted in the high schools' students in North Macedonia aims to investigate the impact of STEM education on the students' attitudes, career perceptions and career interests in technology-related fields, specifically in the field of informatics.

By analyzing the responses, we will be able to develop strategies and present to schools, so that maybe we contribute towards encouraging more students to pursue careers in the field of information technology and also address the factors that may be preventing them from doing so. This information will be valuable to policy-makers and educators in North Macedonia, as it can inform and assist them to develop STEM programs in schools and thus increase the number of skilled professionals in the country needed. Promoting STEM education is essential for the economic growth and development of any country, and it is encouraging to see efforts being made in this direction.

Keywords: STEM, educational programs, surveys.

COMPARING CLOUD SERVICE PROVIDERS: AMAZON WEB SERVICES, GOOGLE CLOUD PLATFORM AND WINDOWS AZURE

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Abstract

Cloud computing has revolutionized the way businesses operate, offering cost-effective and scalable solutions for data storage, computing power, and software applications. As more companies move their operations to the cloud, the choice of cloud service provider becomes crucial.

It offers flexibility, lower cost and better access to resources on a global scale. So how did we get here?

The societal benefits of cloud-based data are still being discovered as we continue to explore how our new technological age is unfolding. While Millennials may believe the cloud belongs to their generation, the roots of “non-local” computing can be traced back to the early 1950s.

This paper provides a comparative analysis of the three leading cloud service providers: Amazon Web Services (AWS), Google Cloud Platform (GCP), and Microsoft's Azure. It provides a comprehensive comparison of these providers, examining their pricing models, performance metrics, security features, scalability, reliability, and other key factors.

Additionally, the paper investigates how the three platforms differ in terms of their architecture, services, and integration capabilities with other platforms. By examining these factors, the paper aims to help readers understand the strengths and weaknesses of each provider and make an informed decision when choosing a cloud provider for their business needs. By evaluating these factors, the paper aims to help organizations make an informed decision when selecting a cloud provider for their business needs.

Keywords: Cloud Computing, Amazon Web Services (AWS), Google Cloud Platform (GCP), Microsoft Azure, Business needs, Cloud service provider.

THE EFFECT OF KNOWLEDGE MANAGEMENT FRAMEWORK ON ORGANIZATIONAL PERFORMANCE- AN EMPIRICAL STUDY

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Abstract

Knowledge management is the process of identifying, creating, sharing, and utilizing knowledge and information within an organization. The purpose of knowledge management is to improve efficiency, productivity, and innovation while reducing redundancy, errors, and wasted resources. Effective knowledge management involves the use of various tools and techniques, including knowledge mapping, communities of practice, storytelling, and technology-based solutions such as knowledge repositories, social media, and collaborative platforms.

Organizations that successfully implement knowledge management strategies have a competitive advantage by leveraging their collective knowledge and expertise, fostering a culture of learning and continuous improvement, and enhancing their decision-making processes. However, knowledge management is not without challenges, such as resistance to change, lack of incentives, and difficulties in measuring the effectiveness of knowledge sharing initiatives. Therefore, organizations must develop a comprehensive knowledge management framework that aligns with their goals, values, and culture, and continuously monitor and adapt their approach to ensure its success.

The main aim of this research is to show how this theory of knowledge management acts in real business environments, where different stages and advantages will be discussed and finally how this implementation helps companies to innovate. For better understanding of this concept case study is provided and includes two most known companies in North Macedonia. “Ecolog- International” and “Kipper” which operate on a global scale. Analyses were made by using qualitative and quantitative research methodology, surveys and interviews for generating rich and empirical data.

Keywords: Knowledge management framework, organizational performance, surveys.

STREAMLINING POSTAL SERVICES IN NORTH MACEDONIA: A CASE STUDY

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Abstract

The COVID-19 pandemic has indeed been an extraordinary situation that has required adaptation to new circumstances and forced all market players, including postal operators, to adjust to new challenges. It is important to note that the postal industry has faced challenges in the past decade, including declining mail volumes and revenue. However, many postal operators have implemented various strategies to adapt to changing market conditions and remain profitable, including the adoption of modern technologies such as Postal Management Systems. These systems provide a centralized platform to manage and track various postal operations, which can help postal operators to optimize their operations and reduce costs. By automating several tasks involved in managing postal services, these systems can reduce manual labor and increase efficiency, enabling postal operators to offer better customer service and improve their bottom line. Overall, implementing a Postal Management System can be an effective strategy for postal operators to overcome the challenges faced by the postal industry and improve their performance in the long run. This paper aims to introduce the benefits of a Postal Management System to the postal services in North Macedonia.

Keywords: Postal Management Systems, postal organization, postal performance.

INTERNET SAFETY AND ATTITUDES OF STUDENTS WORKING ON A COMPUTER FOR PRIMARY AND SECONDARY SCHOOL STUDENTS IN THE MUNICIPALITY OF PRISTINA

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Abstract

The use of the Internet and its addiction for children has become as interesting as it is inevitable, therefore the interest in the protection of children and knowledge about safety is essential.

The purpose of this paper is to inform and raise children's awareness of Internet safety and the potential risks they may be exposed to while using the Internet; in the behavior and success of children at school, according to the perception of the students themselves and their parents, as well as their opinions regarding the frequency of Internet use they spend while working with the computer.

The population consists of children of upper secondary primary schools in the municipality of Pristina, because this age of children spends a lot of time on the computer and the Internet and spends unnecessary and harmful time for their age.

The instrument that was used for data collection is the questionnaire for students of this generation, the distribution of a guide on how they access the Internet, how to protect themselves from the Internet, staying in front of the computer and the time they should spend on the Internet.

The results of this research are that children in general do not have enough knowledge about the safety risks of the Internet and have underestimated the time they spend on the Internet. The vast majority of them think that sitting in front of the computer has no or little effect on their physical injuries.

Keywords: Internet, security, computer, children, school, etc.

ARTIFICIAL INTELLIGENCE: BETWEEN DIALOGUE AND FICTION

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Abstract

This paper explores the history of artificial intelligence (AI) and the pioneers who laid the groundwork for its development. Accordingly, it explores the current state of art of the AI and the potential for machines to surpass human intelligence. That's what makes us the human kind work harder every day to make things easier and easier, but where does it stop and will it bring us to our extinct. The study highlights various powerful and intelligent AI systems, including Google's AlphaGo and OpenAI's Chatgpt and DALLE 2. It recounts a story of a Google engineer who claimed that an experimental AI chatbot had become sentient, sparking a media storm and raising questions about the possibility of machines developing consciousness. The impact of artificial intelligence on society and the future of intelligent machines is also explored. Likewise, the paper explores the concept of sentience and singularity, their meaning and consequences. In general, this research aims to answer an important question considered nowadays, is AI becoming sentient?

Keywords: Artificial intelligence, AI, sentience, machine learning, singularity.

NATURAL LANGUAGE PROCESSING AND TEXT-TO-SPEECH TECHNOLOGY

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Abstract

Text to speech (TTS) technology is the process in which the computer is made to speak. It uses natural language processing concepts. Despite the advancement of technology that allows information to be stored electronically, textual information still remains the most common way of exchanging information. Using text documents is problematic for visually impaired people in many scenarios, such as reading text on the move and accessing text under less than ideal conditions. The goal is to allow blind users to touch the printed text and receive the real-time transmission of the words. The development of such systems requires the use of such systems, requires the use of two technologies that are central to these systems, namely optical character recognition (OCR) to extract text information (Text Information Extraction) and text to voice (TTS) to convert this text in question. Text information extraction is the first and most important function of any assistive reading system and is an integral part of OCR because this process determines the intelligibility of the extracted word. Recent developments in computer vision, digital cameras and computers make it possible to develop cameras, products that combine computer vision technology with other existing useful products such as optical character recognition systems are used to recognize words. She can recognize characters, words and sentences without any mistakes. OCR has a high recognition rate which is the electronic conversion of photographed images of typed or typed text into computer readable text. Developments in computer technology make it possible to help these individuals by developing camera-

based products. People with poor vision need portable assistance to read this printed text. The need to develop a voice-assisted text to speech system using the optical character recognition method with different sets of input and speech output is simulated.

Keywords: language, processing, synthesis, TTS, voice, visually impaired.

AN OPTIMIZED HOME ENERGY MANAGEMENT ALGORITHM WITH INTEGRATED RENEWABLE ENERGY AND STORAGE RESOURCES

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Abstract

The efficient use of the incorporation of the photovoltaic generation (PV) and solar panel with the home energy management system (HEMS) can play a significant role in improving grid stability and economic benefit of the consumers.

To reduce the peak load and electricity bill while preserving the user comfort, was proposed a smart appliances control algorithm for the smart home energy management system (SHEMS) with integration of the renewable energy sources (RES) and energy storage system (ESS). The proposed algorithm decreases the peak load and electricity bill by shifting starting times of shifted appliances from peak too off-peak periods.

Therefore, an energy storage system (ESS) and backup battery storage system (BBSS) is also considered for stable and reliable power system operation. The aims of this is to reduce energy usages and monetary cost with an efficient home energy management scheme (HEMS).

In this paper, a cost –efficient power-sharing technique is developed which works based on priorities of appliances operating time.

Keywords: smart home, home energy management system (HEMS), renewable energy sources (RES).

THE IMPACT OF ONLINE LEARNING ON STUDENTS' SUCCESS AND OUTCOMES IN HIGHER EDUCATION

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Abstract

Online learning in the learning process in higher education has become increasingly popular in recent years. But, especially during the time of the COVID-19 pandemic, higher education institutions have moved from traditional face-to-face learning to online learning. However, there is debate as to whether online learning is as effective as traditional classroom-based learning in terms of student academic achievement. Online teaching/learning poses a serious challenge to be faced by both university teachers and students, as it necessarily requires the adoption of various new teaching/learning strategies to achieve effective academic results.

This paper aims to analyze the impact of online learning on the success and results of students during their studies. The study was conducted through a survey, where data were collected through questionnaires distributed to students of different study programs. The statistical method was used in the data analysis.

The finding of the study shows that to what extent online learning has impact in the students' academic achievements and successes. The paper could provide a valuable contribution to the field of online learning by examining the impact of online learning on the success degree and outcomes of students, and identifying the factors that can promote or hinder their academic achievement in online environments. Analysis can inform the development of more effective online learning strategies and support services to help students succeed in their online courses.

Keywords: online learning, higher education, student success, study programs.

UNDERSTANDING THE BENEFITS AND CHALLENGES OF COMBINING SOA AND BLOCKCHAIN

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Abstract

Service-Oriented Architecture (SOA) and blockchain are two emerging technologies that can be used to address challenges in developing decentralized, secure, and efficient systems. The integration of these two technologies has the potential to provide numerous benefits to enterprises, including increased security, transparency, and automation. However, this integration also poses significant challenges, such as integration complexity, limited scalability, and a lack of standardization. In this paper, we provide an overview of the integration of SOA and blockchain, including the benefits and challenges associated with this integration. We also present a use case of blockchain-based SOA for supply chain management, demonstrating the potential of this integration in real-world applications.

Keywords: Service-Oriented Architecture, SOA, Blockchain, Smart Contract, Decentralization, Security.

BUILD A PHP & MYSQL APPLICATION FOR TEXT SECURE IN AZURE CLOUD

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Abstract

Cloud Technology is astronomically used by businesses companies. It offers an on-request service, substantial network connectivity, flexibility, and other benefits. The use of cloud services is hampered by several security issues. When a user processes and uploads confidential data to the cloud platform, it must be sent and stored securely.

Transferring of sensitive or classified texts, the encryption technique is applied to hide private information, the Affine Cipher method is used, a type of mono alphabetic substitution encryption, where each letter of the English alphabet is mapped to its numerical equivalent, encoded using a mathematical function and returned in letters.

What this system does is that it enables users to login into the system with a username and password to save text encryption and decryption.

The encryption of the text is done by generating two keys, while the receiver of the encrypted text must send two keys to decrypt the text.

If the encrypted text is sent publicly, others will not know what it is, and it will be received by the recipient.

This algorithm makes it possible to make sure that the encrypted text is sent secretly without interference from Internet abusers.

The system for coding uses PHP 8.0 and the online MySQL database to store all related information. Finally, the encrypted and decrypted texts are stored in the database of the Azure Cloud, the project will be accessed in the web browser through the link generated.

Keywords: Azure Cloud, PHP & MySQL, Affine Cipher, Encryption, Decryption.

THE APPLICATION OF BLOCKCHAIN AND ARTIFICIAL INTELLIGENCE IN THE FIELD OF EDUCATION

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Abstract

Blockchain technology and artificial intelligence are marking a technological revolution, finding application in many spheres of life, including education. Although both technologies are making people's lives easier and are being used to overcome various problems that society is facing in general, these technologies are still being misused by malicious people who are trying for bad purposes and for their own benefits to use the same. The use of blockchain and artificial intelligence is seen as a hope for a more qualitative, safer, transparent development of the educational process. Various intelligent devices are used in everyday life from children to students, professors and academic staff to further facilitate the teaching and learning process. It is most important above all, that the use of different intelligent softbots in the academic world is evident in recent times, which as a result of the maximum use of intelligent services offers different help, dealing with different topics. The use of IoT devices, robots and even the creation of intelligent smart devices, which are obviously programmed by human hands, are not missing these days. Therefore, blockchain technology, as one of the safest and most used technologies, even in the field of artificial intelligence, offers the possibility that the same intelligent devices can be programmed in a safe way. One thing is evident, that robots, softbots and all other

intelligent devices are programmed by humans, and perform or generate actions that are programmed in advance. Through the paper, we will briefly try to describe the use of intelligent devices, with special emphasis on the importance of using blockchain technology during the programming and creation of these intelligent devices. We will describe the advantages and disadvantages of using smart devices, and their impact on society and especially on education. We will finish the paper by giving our suggestions regarding the use of intelligent devices in the field of higher education institutions in particular.

Keywords: blockchain, AI, smart devices.

CYBER SECURITY IN EDUCATIONAL INSTITUTIONS

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Abstract

Data security is the main challenge of any internet communication. The world is facing many major cyber attacks. Many jobs today cannot be done without the use of the internet. It is impossible for a medium that transmits data to be secure all the time. The higher the speed of communication, the greater the chance of errors. Educational institutions face a range of cyber security threats, including malware infections and data misuse.

This paper will analyze the types of cybernetic security threats faced by educational institutions in Kosovo and the impact they may have on students, teachers and staff. It also examines the various strategies that can be implemented to reduce these risks, such as using passwords, regularly updating software and systems, and providing information security training to staff and students. The research is based on a review of existing literature and case studies, as well as interviews with cyber security experts and cyber technology professionals in the education sector in Kosovo.

Keywords: cyber security.

USING HEURISTICS TO EVALUATE USER EXPERIENCE IN EDUCATIONAL VIDEO GAMES

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Abstract

Educational video games have gained popularity in recent years as a means of enhancing student learning outcomes. In video games, the scene of a concrete context is designed in which certain problems are solved and it gives the player, in our case the student, the opportunity to make decisions, research, create and be interactive. One promising approach is the use of heuristics, which are cognitive strategies that individuals use to solve problems and make decisions. This paper aims to investigate the impact of heuristics on learning outcomes in educational video games. This paper reviews the literature on heuristics in education and video games, exploring the different types of heuristics that can be used and their effectiveness. Additionally, the potential drawbacks of using heuristics in educational video games are discussed, and suggestions for further research are made. The study employs a mixed-methods approach to gather data and assess the effectiveness of heuristics in educational video games. The findings of this research will contribute to the understanding of how heuristics can be used to improve student learning outcomes in educational video games.

Keywords: Video games, heuristics, education.

RAMAN SPECTROSCOPY AND IMAGING FOR CANCER DIAGNOSIS

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Abstract

Cancer remains the world's grand challenge. Cancer is one of the most common diseases that burdens our society and creates stressful situations for individuals and their families from physical, emotional, and financial viewpoints. According to the WHO(World Health Organization), cancer is the second global leading cause of death and different types of cancer affect men and women dissimilarly. There is an urgent need for the development of new techniques for cancer screening, diagnosis, and intraoperative surgical guidance. Raman spectroscopy, the latest to attempt the jump, has launched itself over the abyss, but it hasn't quite yet touched down on the other side. Raman spectroscopy is readily applicable to in vivo studies. It is an analytical method based on measuring the scattering of infrared and visible light. This technique can be used to investigate the structure and various properties of the material. A key to the successful treatment of cancer is early detection because of the substantial decrease in mortality that the detection of tumoral lesions and masses in the early stages of the illness can produce. Now, early diagnosis of cancer is achieved by using a range of imaging techniques, such as Computed Tomography (CT), Magnetic Resonance Imaging (MRI), etc. The use of various contrast agents and radiotracers for cancer imaging is reviewed, as are the current limitations of ultrasound, x-

ray imaging, magnetic resonance imaging (MRI), single-photon emission computed tomography, positron emission tomography (PET), and optical imaging. Innovative technologies are emerging that hold great promise for patients, such as positron emission mammography of the breast, hyperpolarization MRI and time-of-flight PET for cancer treatment. This review explores these emerging technologies and considers their potential impact on clinical care.

Keywords: Raman spectroscopy, Magnetic Resonance Imaging, Computed Tomography.

AN ANDROID APP FOR EFFICIENT CALCULATION OF ELECTRICAL CIRCUIT PARAMETERS USING MOBILE DEVICES

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Abstract

With the widespread use of mobile devices, demands increase for developing applications that can simplify complex tasks and problem-solving. One of the problems is how to calculate the parameters of an electrical circuit using mobile devices. This article discusses the development of a mobile application for Android devices that can calculate the parameters of electrical circuits. The developed application uses image processing techniques to recognize simple electrical circuits and calculate the parameters of their components. The user can input the component values or use the camera of the mobile device to scan the circuit. The article also explores the potential future developments of the application, including the use of advanced algorithms and techniques for optimizing circuit design and improving accuracy and efficiency.

Overall, this mobile application demonstrates the potential of mobile devices for solving practical problems in field engineering.

Keywords: Smart phone, Android, electric circuit.

INTEGRATION AND IMPLEMENTATION OF BLOCKCHAIN TECHNOLOGIES IN THE AUTOMOTIVE INDUSTRY

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Abstract

This paper provides an overview of the blockchain models implemented in the automotive industry, including energy trading and charging models, vehicle communication models, material tracking models, and lease history models. It explores the effectiveness of these ideas, as well as their respective advantages and disadvantages. Additionally, the paper discusses the latest advancements in the digitalization and decentralization of critical automotive data, including car registration, maintenance history, prices, and standards, as well as tracking and navigation. It highlights the potential of blockchain to increase transparency and reduce fraud. Specific examples of companies and organizations using blockchain technologies in the industry are also provided, and potential future developments and emerging use cases are discussed. Lastly, this paper addresses potential criticisms and challenges to the use of blockchain technologies in the automotive industry. Through this comprehensive examination of the topic, readers will gain a deeper understanding of the role of blockchain technologies in the automotive industry and its potential impact on the future of the industry

Keywords: blockchain, distributed ledger technology, decentralization, digitalization, automotive industry, electric vehicles, supply chain management.

ARC FLASH HAZARD

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Abstract

In this paper, the following questions will be analyzed: Types of electrical faults. What is an electrical arc flash? How do I calculate the danger posed by an arc flash? How do I protect myself and others from an arc flash? Also it is important is any of the following regulations are going to be implemented in the power system in the R Macedonia:

1. National Fire Protection Association (NFPA) Standard 70 or better known as The National Electric Code. The NEC® 2002 addresses the arc flash hazard in Article 110.16
2. NFPA 70B 2002 Recommended Practice for Electrical Equipment Maintenance.
3. NFPA 70E 2000 Standard for Electrical Safety Requirements for Employee
4. IEEE 1584-2018 IEEE Guide for Performing Arc-Flash Hazard Calculations

Keywords: arc flash, PPE, hazard analisis, arc flash calculations.

SECURITY STANDARDS FOR WEB APPLICATIONS

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Abstract

Application security refers to security measures used at the application level to protect against stealing or hacking of data or program code. It includes security considerations that take place throughout application development and design, as well as systems and methods to protect apps after they are put into use. Like any software, web applications inherently have issues. Some of these issues represent genuine vulnerabilities that can be used against organizations. Security for web applications guards against these defects. It entails utilizing secure development methodologies and putting security controls in place at every stage of the software development life cycle (SDLC), making sure that both implementation- and design-level bugs are fixed. Development teams must follow web application security standards to defend software organizations from attack, as online applications are currently the number one target of proven security breaches.

In this article, I'll attempt to explain how web application security works and what developers really need to do to create secure applications that allow users to enter any data. We will also highlight certain standards that have been developed by various security organizations that have attempted to develop a safe online application in order to make it as simple as possible to comprehend the security of web apps.

Keywords: OWASP, CISQ, Web Applications, Security Standards, Web Application Security.

LEARNING THROUGH PSYCHOLOGICAL- PEDAGOGICAL AND PROBLEM-STUDY METHODOLOGY

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Abstract

Pedagogical psychology always uses those methods that come into general use, including its own typical methods, which means the methods that are used the most in pedagogical psychology.

All the child's psychological-pedagogical methods will be collected in only two groups. The observant and that of the prudent, how to say directly and indirectly, yes we can say the simple or appropriate observant.

The method of simple or appropriate observation is a method that is observed mainly in school and life practice, so we call this form of observation appropriate or accidental, for the reason that we will use this method when we have the opportunity to observe something.

Keywords: Psychology, pedagogy, learning, method, children, prudence.

CHEMISTRY

APPLICATION OF MATHEMATICAL MODELS FOR PREDICTING THE TRIHALOMETHANES CONTENT IN DRINKING WATER IN THE CITY OF DIBRA, NORTH MACEDONIA

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Abstract

Trihalomethanes (THMs) as the main disinfection byproducts created when chlorine reacts with organic matter of the drinking water. THMs in high concentrations are harmful and can be carcinogenic for the liver, pancreas, nervous system, development organs, whereas in women can cause miscarriage. Consequently, THMs must be constantly monitored. THMs mainly are determined by the gas chromatography method, which is a difficult procedure and very costly. To avoid this, in the past years the use of mathematical models for prediction of THMs in drinking water has been practiced. By fast measuring of the values of some simple parameters of drinking water quality and replacing them in the mathematical models we can predict the THMs content. The aim of this article was the prediction of the THMs content in drinking water in the city of Dibra for the spring 2021 in four sampling points D1, D2, D3 and D4.

The measured parameters were: water temperature expressed, residual chlorine, pH, electrical conductivity expressed, chemical oxygen demand, total dissolved solids and chlorides. For prediction were used ten mathematical models and the average value of THMs with standard deviation was $23.875 \pm 8.16 \mu\text{g/L}$. From the results we

can conclude that the used models for THMs prediction have been successful and this content of THMs pose no risk to public health.

Keywords: THMs, physico-chemical parameters, drinking water, mathematical models for prediction, health.

THE SPREAD OF SARS COV-2 VIRUS IN THE POLLOG REGION DURING THE 2020 PANDEMICS

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Abstract

SARS-CoV-2 is a single-stranded ribonucleic acid (RNA) virus with an approximately 30 kb genome. For the detection of the SARS-CoV-2 virus, the detection of viral RNA through nucleic acid amplification (NAAT), such as RT-PCR (real time polymerase chain reaction), remains a reference standard.

Samples of patients tested for SARS CoV-2 virus at the IPH Laboratory for Molecular Diagnostics “LAOR” have been used for the realization of this scientific research. This research covers Pollog region patients’ data in the period of time from July 1st through December 31st of 2020.

The samples were taken from the nasopharyngeal and oropharyngeal swabs , which then were placed in the viral RNA extraction facility. This procedure was performed through the automated medical equipment: QIAcube Connect (Qiagen) and the kit of reagents: QIAamp Viral RNA Mini QIAcube Kit (Qiagen). The basis of the extraction is the binding of the viral RNA specifically to the silica membrane of the QIAamp.

The extracted RNA is amplified and detected through the PCR method. For the amplification process the QIAquant 96 5 plex (Real-Time -PCR)-Qiagen medical device was utilized, as well as the following set of reagents: Primerdesign™ Ltd Coronavirus COVID-19 genesig® Real-Time PCR assay (Real-Time PCR reagent) and EURORealTime SARS-CoV-2 (Real- Time PCR reagent).

The obtained results of SARS-CoV-2 viral RNA detection show that of the total number of those tested, only 14.04% were positive. More people were tested in October 2020. Gender-wise, more men were affected, who differ in percentage from the female gender by only 2.82%. Regarding the age group, people over 50 were more affected with a percentage of 40.98%, then the age group of 31-50 years with 35.43%, then the age group of 19-54% and the less affected age group under 18 years with a percentage of 4.06%

Keywords: pandemics, SARS-CoV-2, Real-Time –PCR, Molecular Diagnostics, viral RNA.

ELIMINATION OF STUDENTS` PROBLEMS ON THE MEANING OF HYDROCARBONS

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Abstract

The purpose of this study was to investigate the effects on student's achievement and misconceptions of new teaching methods developed for hydrocarbons. The new material included worksheets based on the conceptual conflict strategy. The sample consisted of 60 students. The research was carried out with an experimental/control group design, and lasted for four weeks. The Concept Achievement Test was used to collect data before and after the study as pre-tests and post-tests. The results from the post-tests indicated that the students in the experimental group, taught with the new teaching method, showed significantly greater achievement in the unit than did the students in the control group. This shows that the misconceptions in the experimental group were less than the control group.

Keywords: hydrocarbons, misconceptions, experimental and control group.

INFRAED AND RAMAN SPECTRA OF MGTL(ASO₄)₂ X 6H₂O

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Abstract

The structure of MgTl(AsO₄)₂ x 6H₂O is determined by x-ray diffraction.[1]. The space group and the parameters of the elementary cell of the compounds from the struvite, M^IM^{II}XO₄·6H₂O (M^I = NH₄, K, Rb, Cs, Tl; M^{II} = Mg, Ni; X = PO₄, AsO₄), they were determined with the help of the x-ray diffraction [2, 8–17]. The crystal structure of the struvite, MgNH₄PO₄·6H₂O, was determined with the help x-ray and neutron diffraction [9–11], whereas on MgTlAsO₄·6H₂O was determined only with the help of x-ray diffraction [2]. The studied compound crystallizes orthorhombic(space group $Pmn2_1$ т.е. C_{2v}^7) with two formulary units in the elementary cell. The parameters of the elementary cell are: $a = 695,9(7)$ pm, $b = 619,3(5)$ pm и $c = 1143,0(6)$ pm, while $\alpha=\beta=\gamma = 90^\circ$ [2]. The x-ray graph of MgTlAsO₄·6H₂O is shown in picture nr.1.

Keywords: Magnesium Thallium Arsenate Hexahydrate, X-ray diffraction, Infrared spectroscopy, Raman spectroscopy.

INFRAED AND RAMAN SPECTRA OF $\text{CaK}_3\text{H}(\text{PO}_4)_2$

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Abstract

Even though we tried to get a deuterated analogue of $\text{K}_3\text{CaH}(\text{PO}_4)_2$ we did not have success, therefore we focused on the specters of protiated analogue of the said compound. The structure of $\text{K}_3\text{CaH}(\text{PO}_4)_2$ is determined by x--ray diffraction.[1].The compound crystallizes in the monoclinic system (space group $C2/m$ respectively C_{2h}^3)with two unit formulas in the elementary cell. The structure of this compound characterizes with the existence of symmetrical dimers $[\text{H}(\text{PO}_4)_2]$,similar like the $\text{Mg}_2\text{KH}(\text{PO}_4)_2 \cdot 15\text{H}_2\text{O}$ and $\text{Mg}_2\text{KH}(\text{AsO}_4)_2 \cdot 15\text{H}_2\text{O}$ [7]. The IR and Raman spectra are recorded at room temperature and at the boiling temperature of liquid nitrogen(LNT).

Keywords: Potassium calcium hydrophosphate, X-ray diffraction, Infrared spectroscopy, Raman spectroscopy.

OPTIMIZATION OF EXTRACTION PROCESS OF THE LEAVES OF MATES FOR DIFFERENT RAW MATERIAL RATIO TO THE SOLVENT

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Abstract

Leaves of Mate are leaves of pharmaceutical plant *Ilex paraguariensis*. Mate is a raw material and is widely used in medicine. Mate leaves are mainly the ones that in its content have important substances, and in this group are Caffeine Theobromine Theophylline, Chlorogenic Acid, and Etheric oil. Long ago the leaves of Mate have been used only as grinded and mixed with water, known as mate tea, which also has a curative effect. Nowadays, standard methods are required a lot, in order to get an extract of Mate, so that the dosage to be more accurate, on the other side main substances to be also standardized and dissolved equally in extract. There is a possibility even percolation extraction to be used for this, because we have leaves, however in this case the extraction is made by maceration using specific conditions, first of all different ration of raw material and the solvent used for extraction, reduced grinding degree and low concentration of the solvent. Maceration as a form for extraction, gives an opportunity for the main components of Mate leaves to be completely extracted and the extraction coefficient is higher, on the other side technological process is further realized without any problems.

Keywords: extract, maceration, percolation.

RELATION OF EXTRACTION PROCESS OF SAMBUCUS NIGER WITH THE SIZE OF GRANULES OF THE RAW MATERIAL

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Abstract

The extraction process of plant-based pharmaceutical raw material *Sambucus Niger*, is related to many factors such as the size grind raw material, extraction temperature, number of spinning of the mixer, maceration time, concentration of the solvent, as well as the amount of the solvent in relation with the raw material. Each of these factors has a direct relation with the type of the pharmaceutical plant which undergoes extraction. The content of the raw material which may be grounded flowers, stalks mixed with flowers, roots of raw material or fruit of raw material indicated the method that should be used for extraction, such as extraction with various solvents-Maceration, extraction with CO₂, and percolation extraction. In this case when the raw material is a fruit of a pharmaceutical plant, the extraction is made by maceration, a method that also has its complexity in the technological process for such raw material. The grinding degree of raw material indicates optimization of the technological process, on the other side it maintains a high value of the extraction coefficient as well as reaching maximum values of basic substances that are present in the raw material.

Keywords: Extraction, maceration, extraction coefficient.

OPTIMIZATION OF OLIVE LEAVES EXTRACTION PARAMETERS DURING THE MACERATION PROCESS

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Abstract

Olive leaves have a significant importance in phytopharmacology, first of all due to their efficiency in medicine. Extraction of leaves is of a special importance, this involves preparing the leaves for extraction, choosing the extraction method as well as properly combining factors that affect the extraction process. Olive leaves may be extracted in two different methods, through percolation or maceration. Percolation extraction does not require specific conditions for extraction but the extraction coefficient is lower, therefore the maceration extraction has more advantages, the extraction coefficient is higher, less amount of obtained extraction but with more dried mass which makes further technologic process more fluid. The extraction process through maceration also requires optimization of essential factors which affect the extraction process, such as: degree of grinding of raw material, the degree of spinning the mixture, maceration temperature, the degree of concentration of the solvent, solvent ratio to raw material which is extracted, as well as the maceration time. Optimization of these factors makes the process profitable in the economy, and a high extraction of the main components in the raw material.

Keywords: extraction, maceration, percolation, dry mass.

VARIATION IN FAT AND PROTEIN CONTENT AT ANISE LANDRACES (*PIMPINELLA ANISUM L.*) STORED AT DIFFERENT TEMPERATURE AND PACKAGE

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Abstract

Anise (*Pimpinella anisum* L.) is an aromatic plant from the Apiaceae family which has various medical properties. It has been used to protect human health and improve the quality of human life for thousands of years. This plant has different benefits and uses such as reducing the symptoms of depression, rich in nutrients, protecting against gastric ulcers, prevents the growth of fungi and bacteria, could help relieve menopause symptoms, may balance blood sugar levels and blood pressure, can reduce inflammation, stimulant, culinary significance, skin benefits. Numerous studies show that wild and cultivated *P. anisum* L. has a wide range of compounds, including flavonoids, terpenes, essential oils, they are rich also in bioactive compounds, such as phenols, tannins, carotenoids, and fatty acids. These compounds have pharmacological activities, antioxidant, antibacterial, antifungal, insecticidal, antiviral, anti-inflammatory, analgesic, gastro-protective, antidiabetic activities. In this research, *Pimpinella anisum* L. was investigated from 11 different localities in terms of latitude and longitude, in the town of Negotino, Republic of North Macedonia. The nutritive traits of *Pimpinella anisum* L. were analyzed 15 days before harvest and 3 months after storage at room temperature, under +4 °C and at -18 °C and it was observed that the mean value of protein content was 17.83%; 17.62%; 17.40%; 17.25%

and the mean value of fat content was 16.23%; 16.23%, 15.88%; 15.76%, respectively. The samples were stored in a zip plastic bag (manually compressed air).

Keywords: Pimpinella anisum, nutritive traits, aromatic plant, compounds, temperature.

THE INFLUENCE OF THE ADDITION OF FERMENTED FOOD TO THE DIET OF CHICKENS ON SOME MEAT QUALITY PARAMETERS

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Abstract

The study aimed to evaluate the impact of fermented and unfermented rapeseed meal (FRSM and URSM) on chicken meat quality including physicochemical properties, antioxidant capabilities, and dipeptide composition of the chicken meat. Three different groups of broiler chickens were treated with different feed compositions: control (without incorporation of RSM), URSM, and RSM fermented with *B. subtilis* 67 (FRSM). The study showed that FRSM reduced the fat content and improved the protein and mineral content of the meat. It also revealed a higher amount of protein availability which is aligned with pH change during rigor and color change during the cooking process. FRSM had a better digestibility which can be seen from a higher level of anserine value of the FRSM-treated chicken meat. A high level of anserine in chicken meat is associated with its FRAP (ferric reducing antioxidant potential) antioxidant activity. In conclusion, RSM fermented with *B. subtilis* 67 generated chicken meat with low-fat content, comparable antioxidant properties, higher protein availability and anserine amount, and improved cooking properties.

Keywords: rapeseed meal, prebiotic, meat quality, antioxidant activity, fermented feed.

SYNTHESIS, SPECTROSCOPIC AND THERMAL CHARACTERIZATION OF γ -L-GLUTAMYL-CYCLOHEXYLAMIDE

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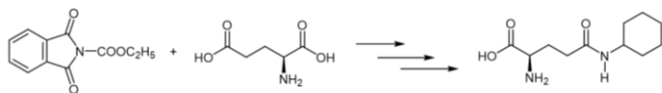
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Abstract

L-Glutamic acid is one of the most important amino acid, presents as a key intermediate in the biosynthesis of other amino acids by as transamination process, as a flavor-enhancing component for food and as an excitatory neurotransmitter in the vertebrate nervous system. L-Glutamylamide derivatives were also tested as a low-molecular weight organogelator and showed thixotropic property. Considering the important biochemical application of L-Glutamic acid and its derivatives, this paper presents a new route to obtain γ -L-glutamyl-cyclohexylamide. This derivative was synthesized by regioselective acylation of cyclohexyl amine using N-phthaloyl-L-glutamic anhydride, followed by hydrolysis of phthaloyl group with hydrazine hydrate. All of the obtained compounds were characterized via their spectral and thermogravimetric analysis. The identity of the ligand was confirmed by spectral analysis such as ¹H-NMR, ¹³C-NMR and HRMS. The thermal stability of the γ -L-glutamylamide was discussed in the 20-800 °C temperature range. γ -L-glutamylamide decompose in multistage, some of stage are weakly separated one from another. The γ -L-glutamyl amide is completely pyrolyzed at 586 °C and the final product of pyrolysis was ash.



Keywords: synthesis, L-glutamic acid, glutamylamides, structure, thermal behavior, spectra.

SYNTHESIS AND SPECTROSCOPIC INVESTIGATIONS OF β -L-ASPARTYL-CYCLOHEXYLAMIDE AS POTENT LIGAND FOR TRANSITION METAL COMPLEXES

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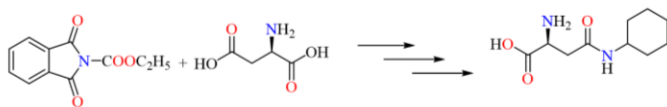
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Abstract

The L-aspartic acid is a natural amino acid and a building block for peptides and proteins. Besides, a series of compounds and metallic complexes such as metalloproteins which contain acid residues have biological applications. In this course, a new route to prepare β -L-aspartyl-cyclohexylamide was carried out by regioselective acylation of cyclohexylamine using N-phtaloyl-L-aspartic anhydride, followed by hydrolysis of phtaloyl group with hydrazine hydrate.

The preparation of β -L-aspartylamide was attempted by an original method which involved 4 steps of synthesis. In the first synthetic step, N-carbethoxyphthalimide was used through an original method developed in our group, managing to improve the conditions of reaction to not affect the chiral center. The second activation phase was performed in good yields, obtaining the pure product. In the third stage the amine regioselective attack in the β position, released sterically, was performed, and in the last step, the amide deprotection was achieved by hydrazinolysis. The structure of the intermediates and the final amide was confirmed by MS, ¹H- and ¹³C-NMR.



Keywords: L-aspartic acid, synthesis, aspartyl-amides, spectral analysis.

THE ECOLOGICAL RISK OF CONTAMINATION WITH TOXIC METALS IN THE SOILS, WASTE AND ASH, AROUND THE "TREPÇA" COMPLEX, THE "KOSOVO" THERMAL POWER PLANTS AND THE NEW FERRONICKEL COMPLEX

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Abstract

Samples of toxic waste, soil and ash, were collected in the landfill (solid environmental hot-spots) near the "Trepça" Complex, "New Ferronickel" and Kosovo "Thermal Power Plants", and analyzed by the ICP-OES method to measure the concentration of 10 toxic metals (Pb, Cd, Cr, Ni, Zn, Cu, As, Co, Mn, and Fe). The pollutant with the highest mean concentration (in acidic medium) was Fe (36400.00 mg/kg), followed by the Mn (8683.00 mg/kg), Cr (6575.00 mg/kg), As (4739.00 mg/kg), Pb (3364.00 mg/kg), Zn (2394.00 mg/kg), Ni (922.60 mg/kg), Cu (297.60 mg/kg), Co (46.60 mg/kg). and Cd (61.8mg/kg). To analyze the level of heavy metal pollution in an area, more than one pollution index analysis is needed, so in this study 3 pollution indices were used, namely the geoaccumulation index (Igeo), contamination factor (CFi), and the pollution load index (PLI). The CFi (contamination factor) values determined for Fe, Mn, Cr, As, Pb, Zn, Ni, Cu, Co and Cd indicated a high degree of contamination in all samples. In all soil samples the PLI values indicated the presence of soil pollution.

Keywords: Trepça, Ferronickel, thermal power plant, toxic metals, ecology risk, soil, waste.

PHYSICAL, CHEMICAL AND MINERALOGICAL PROPERTIES OF NON-EXPANDING PERLITE

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Abstract

Perlite is a generic idiom for naturally occurring volcanic solids. Often it is grouped with minerals, even though according to the literature definition, crude/ raw perlite represents an amorphous volcanic glass with small irregularly shaped crystals that differ from pale gray to silky black with pearly luster hence the name, and is produced when felsic lava is extruded from a volcano, manifesting minimal crystal growth, consequently it disintegrates easily. However, the raw material has great value and is widely used in various sectors, thanks to the special features it possesses. The subject sample is considered a waste as it does not expand, due to low water content. The presented paper shows the physical, chemical and mineralogical characterizations of non-expanding perlite. ICP-MS analysis of the sample shows predominant content of silica (SiO_2 , 76.29 wt.%) and considerable amount of aluminum oxide (Al_2O_3 , 12.49 wt.%). The amount of alkali metal oxides K_2O and Na_2O varies between 4.19 wt.% and 3.51 wt.%. LoI (chemically combined water) is calculated at 0.74%. The XRPD analysis shows a

predominantly amorphous glassy phase with minor peaks of plagioclases, anorthite and labradorite. The IR analysis, as expected, shows no presence of bands typical for water which is in line with the nature of the material itself. SEM examinations show predominantly glassy structure with presence of certain impurities which are most likely due to the presence of the plagioclases.

Keywords: non-expanding perlite, ICP-MS, XRPD, IR, SEM.

FABRICATION OF NOVEL MATERIALS FROM TREPTEL THROUGH SINTERING IN 800°C AND 1100°C FOR 2H

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Abstract

One of the most important varieties of diatomaceous earth in North Macedonia is widely known as Trepel. It is a soft, light material with greyish colour, which can be easily broken down into smaller fine particles. The characterized Trepel in this study is taken from the deposit of vicinity of Bitola in North Macedonia with the aim to investigate its physical, chemical and mineralogical characteristics. ICP-MS revealed its chemical composition with SiO₂ (63.69 wt%), Al₂O₃ (11.79 wt%), Fe₂O₃ (5.95 wt%) as the main oxides present which make up over 77% of this material. XRPD proved its crystalline behavior represented by silica (quartz), feldspars (plagioclase), mica (muscovite), chlorites, with small presence of amorphous phase.

SEM microphotographs revealed its biogenetic characteristics, precisely the skeletons of alga Diatomeae with nano-pores. The natural material and samples were sintered in 800°C and 1100°C for 2h in order to obtain a material with higher compressive strength which could be used as construction and building material. SEM results of the sintered samples depicted morphological changes expressed by shrinkage of the pore diameters in comparison to the natural material, while FTIR proved the evaporation of water and the formation of new phases with very promising structure.

Keywords: Trepel, XRPD, FTIR, SEM.

GEOGRAPHY

EXISTING AND POTENTIAL SITES FOR THE DEVELOPMENT OF RURAL TOURISM IN THE POLOG REGION

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Abstract

The region of Polog with its natural, social, and economic features offers the growth and development of rural touristic sites. Rural tourism has great potential because 2/3 of the total area in the region is rural areas.

The paper focuses on the presentation of existing rural tourism sites in the region with all its qualitative geographical features and potential sites for rural tourism development. In this paper, several interrelated methods are used: analysis and synthesis methods, evaluation methods, information methods, cartographic methods, and field research methods.

With the valorization of natural and anthropogenic tourist resources, the proper development of rural tourism can be achieved in all tourist localities in the region of Polog. From the knowledge and results obtained, it is concluded that the region of Polog has considerable potential for the development of rural tourism in existing and potential rural tourism sites. Rural tourism represents a strategic option for the social and economic development of the rural area in the Polog region.

Keywords: rural tourism, existing sites, potential sites, Polog region.

GLOBALISM AND THE FUTURE OF NATIONAL CHARACTER

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Abstract

The word globalism is a relatively new word. But even as a world process we can say that it is new. In the world, there have always been trade, but also politics, armies and peoples who have united for different interests at different times for special interests. However, with the creation of a new ideology - communism in Russia in 1917 and in the rest of Europe after the First World War, several empires disappeared and democratic states with national character were established, which means two different systems. The biggest divisions appeared after the Second World War when the world was divided into two sides, the democratic and the communist. There was also a third group of non-aligned states, but their role or power was insignificant compared to the first two. Complete mistrust was created and cooperation between them, mainly in economy and culture, was almost impossible. Therefore, after the collapse of the former USSR and the former SFRY, a new era began in the world, the era of re-globalization.

Rightfully so, many authors see the beginning of globalization as a process after the fall of communism or often said "After the fall of the Iron Curtain".

Communism, on paper at least, granted equal rights to all the people that were under its umbrella, but in practice the opposite happened. Then the destroyed economy of the post-communist states gave people a completely different direction, an orientation towards democracy. However, unfortunately, this process from centralized

economies to market economy or, in political-economic language, transition, brought many problems, in all areas, to the point that they took the bread out of people's mouth. In the meantime, various criminal groups, corrupt politicians, oligarchs who were almost nobody and many other problems emerged. So many people lost hope, hating both the state and its past, which led to great changes in national, social and individual character. Over time things began to change for the better.

Keywords: Globalism, National character, Corruption, Culture, Economy, Security.

POPULATION CENSUS AND ALBANIANS IN THE REPUBLIC OF NORTH MACEDONIA

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Abstract

The two decades between the censuses (2002-2021) have been a historic period from the demographic point of view for the Republic of North Macedonia. North Macedonia experienced a transformation of its population as a result of the interaction of socio-economic changes and demographic changes and especially in migration. The most surprising results that became clear when the last census data became available were the increase in the percentage of the population and the Albanian population in the period between the last two censuses. Despite the importance that this number has in itself, it has far-reaching effects on Albanian society and politics at the state and municipal level where many rights are defined, especially in the use of language and national symbols.

On March 30th, the State Statistical Office also published the total number of the registered population, which includes residents and non-residents. A total of 2,097,319 persons were registered, of whom 54.21 percent declared themselves as Macedonians, 29.52% Albanians, 3.98% Turks, 2.34% Romani, 1.18% Serbs, 0.98% Bosnians and 0.44% Vlachs (Aromanians). Regarding the national composition of the population in North Macedonia, especially the change from 2002 to 2021, shows a decrease of the Macedonian population from 64.18% to 54.21% and other ethnicities and an increase of the Albanian population from 25.17% to 29.52%.

The aim is to analyze the performance of the population by nationality and more specifically the Albanian population in the Republic of North Macedonia, including a more detailed analysis at the national, regional and municipal level in the two decades (2002-2021) and making analyzes, comparisons, graphic and cartographic presentations.

Keywords: Republic of North Macedonia, census, population, Albanian, region, municipality.

THE RESOURCES OF SHARR MOUNTAIN AS A STABLE ECONOMIC BASE

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Abstract

The purpose of this scientific work is to highlight the natural values that lie with a prosperous diversity, which contains a gallery of values that exist unrepeatable in its kind. The study aims to present the geomorphological, climatic and hydrographic forms as well as the evidence of all diverse natural assets. As economic values, forests, pastures, mountain peaks, the rich diversity of endemic plants and animals are presented, many that are encountered in the Sharr Mountain massif, as a stable economic base. The dimensions of the importance of this work are very huge. Firstly, this paper provides detailed data of Sharr Mountain.

Keywords: Resources; Water resources; Pastures; Mountains; Plants; Animals.

MARRIAGES AND DIVORCES BY REGIONS IN NORTH MACEDONIA, 2010, 2015 & 2020

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Abstract

The subject of study in this paper is marriages and divorces in the Republic of North Macedonia. The main goal is to analyze their progress throughout the years 2010, 2015 and 2020, according to regions, where a special emphasis is given to the causes and consequences created by divorces.

The population in RNM over the years has had changes in population structures and demographic processes, both at the state level and at the regional level. Marriage is a very important demographic process for society, which, in cases of dysfunction, leads to divorce as another social process. Divorce, as a global social problem, is growing rapidly even in RNM. The main causes of divorces are economic conditions, gender equality, etc. These two processes are dependent on the total number of gender, ethnic, age structure, etc.

The methods used in this paper are: descriptive, analytical, statistical, graphic, and cartographic, where the data obtained from the state statistics agency of the RNM were analyzed. The number of marriages in RNM for the analyzed years shows a decrease of 3877 marriages, while in divorces we see that from 2010 to 2015 we have an increase of 480 divorces, while in 2020 we see a decrease, both at the state and regional level.

Based on the fact that young people enter marriage at a later age, seeking a more stable standard of living and seeing the causes that

lead to separation, we recommend that young people be provided with the basic conditions for life, safe jobs and are stimulated to continue their growth in the family. Therefore, through the paper, we intend to highlight the problems and consequences that arise as a result of a couple's divorce.

Keywords: marriage, divorce, population, region, North Macedonia.

TOURISM DEVELOPMENT IN THE EAST REGION

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Abstract

This paper deals with the tourism development of the East Region of the Republic of North Macedonia. The development of tourism is important for every region, especially in the economic aspect. Tourism empowers the local economy, creates new jobs, influences the regulation of infrastructure, etc. The Eastern region with its geographical position, dynamic relief structure, suitable climate, water resources, high diversity and endemism of plants and animals, various anthropogenic motives and others create a solid basis for the development of several types of tourism in this region, that can help to turn this region into an interesting tourist destination.

The focus of the paper will be the natural motives (mountains, valleys, lakes, rivers) and anthropogenic touristic motives (archaeological sites, museums, religious objects, manifestations) of this area, alternative forms of tourism that can be developed in this region based on its potential, the number of tourists in the period 2017-2022 and accommodation capacities in the East Region.

Keywords: East Region, tourist motives, alternative tourism, number of tourists.

MIGRATION MOVEMENTS AND THEIR IMPACT ON THE DEVELOPMENT OF THE POPULATION IN THE POLOG REGION

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Abstract

The subject of this paper is the migration movements of the population in the Polog region, for the period from 2004 to 2021. Migrations in the Polog region play an important role in the development of the region. They depend on natural, economic and social factors. Migration and natural movement are the main indicators through which the demographic development of the population is expressed. Therefore, in this paper migration movements and their impact on demographic development have been analyzed.

The descriptive, analytical, comparative method, statistical and cartographic method were used in the preparation of the paper. The analyses and conclusions are based on the processing of data from the State Statistical Office of the Republic of North Macedonia.

In the Polog region from 2004 to 2021, internal migrations decreased by 118 people, while in external migrations the most intense flow were recorded in 2014, with -246 inhabitants and in 2021 with -141 inhabitants. Regarding these rates, we found that the total migration balance of the Polog region decreased in the period 2004-2021 from -146 inhabitants to – 232 inhabitants.

Regarding the selectivity of migrations by gender in the analyzed region with the highest intensity are the migrations of women, while according to the marital status the migrations are more pronounced among young couples and young singles.

The aim is to analyze the migration movements of the population in the Polog region, with special reference to the internal migrations and migrations of Polog region, Polog region migrations abroad and vice versa, the immigrant and emigrant population by gender and marital status, for the identification of the factors leading to these changes related to political instability, weak institutional capacity, but often with poor economic indicators.

Keywords: internal migrants, external migrants, gender, marital status and region.

SOME CHARACTERISTICS OF THE POPULATION DISTRIBUTION IN THE SETTLEMENTS OF THE MUNICIPALITY OF TETOVO

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Abstract

The subject of this paper is the spatial distribution of population in the territory of the Municipality of Tetovo. The development of population of the settlements depends on the influence of the different characteristics and conditions of the space where they are located. The paper analyzes the geographical distribution of the population in the settlements in Municipality of Tetovo in terms of population number, population density, number of households and houses, the distance of settlements from the capital city – Skopje and the distance of settlements from the municipal headquarters. The descriptive, analytical, comparative method, statistical and cartographic method were used in the preparation of this paper. The analyzes and conclusions are based on the processing of data from the State Statistical Office of the North Macedonia, from previous researches and the literature on the studied area and field researches. Research on population and settlements is of great importance for economic and social development in the area, where the main factor for their development are the conditions where they are located.

The purpose of this paper is to study the population of municipality of Tetovo and to present a clearer picture of the distribution of population depending on some geographical determinants, which represent an important prerequisite for the development of space, or

settlements, through which the population can develop activities various economic, and to identify the conditions of the settlements as a factor for displacement of the population and households, as well as to determine the zones with higher or lower population.

Keywords: population, density, households, municipality, settlements.

AIR TEMPERATURE IN THE REPUBLIC OF NORTH MACEDONIA

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Abstract

Air temperature is a measure of temperature at different levels of the Earth's atmosphere. It is governed by many factors, including incoming solar radiation, humidity and altitude. When discussing surface air temperature, the annual atmospheric temperature range at any geographical location depends largely upon the type of biome, as measured by the Köppen climate classification.

Air temperature describes the process of measuring a current local temperature for immediate or later evaluation. Datasets consisting of repeated standardized measurements can be used to assess temperature trends.

Temperature varies greatly at different heights relative to Earth's surface and this variation in temperature characterizes the four layers that exist in the atmosphere. These layers include the troposphere, stratosphere, mesosphere, and thermosphere.

The aim of this paper was to analyze air temperature in the Republic of North Macedonia over the span of 10 years, measured in 26 different cities. Considering the fact that North Macedonia has a decent geographical position and also the relief, the extent and direction of the mountain slopes and their height are important climatic factors which also affect on the air temperature of our country.

Keywords: Air temperature; North Macedonia; Climatic factors; Minimum; Maximum.

THE SEASONAL COMPONENT OF TOURISM DEVELOPMENT IN THE CITY OF SKOPJE

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Abstract

Tourism means people traveling for fun and adventure. It includes activities such as sightseeing and camping. People who travel for fun are called "tourists". Places where many tourists stay are sometimes called "resorts". Places that people go to for tourism are called tourist destinations.

The analysis of the environmental sensitivity, in the context of receptive capacity, is a criterion, which determines the efficiency of the application and long-term evaluation of tourist destinations, particularly regarding environmental issues. The performance management of tourist destinations means achieving a sustainable level of spending on natural resources while retaining underlying competitiveness.

In the design and development the project Stone Lights, this is an evaluation of the tourist value of Adriatic lighthouses. The authors of the project, and this study, aim to determine the exact approach to the sustainable capacity within a controlled expenditure of natural resources in the selected locations.

The contemporary tourist practices often define the receptive capacity and access to the destination, primarily from the aspect of established competitive advantages. Such an approach is shown in tourist practices which are contrary to the effective long-term tourist valuation of the destinations. Format models with the aspect of

destination management and allowable receptive capacity, means the purpose of customized marketing information systems, and known development opportunities of the specific tourist destinations.

Keywords: tourism, destination, tourists, accommodation.

ADMINISTRATIVE DEPARTMENT OF UPPER POLLOG

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Abstract

The Upper Pollog is located in the northwestern part of the Republic of North Macedonia and is one of the eight statistical regions, with the most settlements with Albanian population. This region constitutes a geographical unit, which during the historical processes has become the arena of the confrontation of different peoples and the intermingling of their material and spiritual cultures, creating a complex demographic, social-cultural and economic ensemble.

Nature, society, and economy, like everywhere else, also in the settlements of Upper Pollog are closely connected between them, but the exact definition of this connection is a very complicated matter for both natural sciences and social sciences. One of the reasons for choosing this topic is precisely the desire to present a complex treatment of the physical, demographic, social and economic components of the municipalities on Upper Pollog. The main aim is to deal with the characteristics of each municipality, which gives a clear overview of the topic in question. During the work, we have been focused on several analyses, such as analysis of published literature, studies, and other sources for the settlements of Upper Pollog. In today's political and socio-economic conditions, there is a need for an administrative- territorial organization that guarantees sustainable development and perspective of regional integration and beyond.

Keywords: population, density, municipality, division, administration.

NATURAL AND CULTURAL VALUES IN THE SOUTHWEST REGION OF THE REPUBLIC OF NORTH MACEDONIA AS A PREREQUISITE FOR THE DEVELOPMENT OF ALTERNATIVE FORMS OF TOURISM

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Abstract

Protection of natural wealth means care and maintenance of certain or selected areas, including living or non-living nature, which due to their specific natural values we specifically analyze and value and spatially limit them. Man, as a part of nature and as a major factor in the processes of its transformation, strives through its activities to always use natural and cultural resources. The southwest region is abundant in cultural heritage with a total number of 278 facilities, which date from different periods of time and are of a great potential for the development of alternative forms of tourism. Every country, region and area that strives for the accelerated development of alternative forms of tourism, at the same time, great attention is paid to the protection of natural and cultural values. By valorizing the total number of natural and cultural heritage of the region, we can incorporate them to build a rich tourist offer for tourism development.

Keywords: Southwest region, natural and cultural resources, alternative forms of tourism.

MATHEMATICS

RK4 AND VECTORIAL RK4 USED TO ANALYZE A MODIFIED FORM OF FRACTIONAL ORDER LORENZ SYSTEM

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Abstract

Dynamics of a generalized form of fractional-order Lorenz system is investigated by employing a modified version of the Runge-Kutta 4 method (RK4). The method is very simple and very much effective for solving differential equations of fractional order, it may be used. In order to illustrate the new technique, the numerical algorithm is applied in the 3D solution of Lorenz system by adding the fourth varied parameter, considered as a highly simplified model for the weather. Parameter fixed dynamical analysis method and chaos diagram are used. Results show that the fractional order Lorenz system has rich dynamical behavior and it is a potential model for application. Investigation of dynamics is realized by fixing the parameters $10, 8/3, 24.74abc$ (system has chaotic behavior, numerically illustrated), for $1, 10d$, implemented with the aid of Mathematica symbolic package. The fractional derivatives are described in the Caputo sense. Based on RK4 and Vectorial RK4 algorithms, it is shown that the system has rich dynamical characteristics, it changes from a non-chaotic system to a chaotic one, which is more complex for smaller fractional derivative order $0, 1v$, closer to 0.

Keywords: Caputo fractional derivative, Lorenz system, Runge-Kutta 4, Vectorial Runge-Kutta 4, dynamical behavior.

THE USE OF QUATERNIONS IN THE CALCULATION OF THE SUN'S APPARENT MOVEMENT ACCORDING TO MERCURY AND ITS COMPARISON WITH THE SUN'S APPARENT MOVEMENT ACCORDING TO EARTH

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Abstract

In this paper, the apparent movement of the Sun according to Mercury has been studied and a comparison of this movement has been made with the apparent movement of the Sun according to Earth. The curve of the apparent movement of Mercury is obtained by using quaternions. To achieve this, the celestial sphere is accepted to have a radius of $r = 1$. The equatorial plane of Mercury is intercepted with its own elliptical plane in axis X of the coordinate system. This system coincides with the equatorial coordinate system of Mercury. The apparent movement of the Sun according to Mercury is accepted to begin at point $(1, 0, 0)$. The curve drawn by this point is calculated by using quaternions as rotation operators. For both the daily and yearly apparent movements of the Sun according to Mercury, a quaternion each is defined. These quaternions are used to produce rotation operators for each movement. Afterward, a comparison is made between this curve, and the curve produced by the apparent movement of the Sun according to Earth. This paper, in which the discipline of mathematics joins that of astronomy, helps to present the usefulness of quaternions as rotation operators and simultaneously helps new astronomers perceive the apparent movement of the Sun on other planets.

Keywords: Spherical Spiral, Quaternions, Apparent Movement of the Sun, Rotational Motion.

THE CREATIVITY IN TEACHING MATHEMATICS

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Abstract

Creativity, attitudes, and conceptions of teachers regarding creativity in mathematics teaching have been examined in this study. The instrument used is a questionnaire consisting of three groups of questions. The first group of questions includes questions to gather general information about the teachers, while the second and third groups of questions include questions to gather data about teachers' attitudes and conceptions on creativity in teaching mathematics. The questionnaire was completed by 115 class and Maths teachers. After data analysis, the findings indicate that the majority of teachers have knowledge about creativity and believe that teachers are responsible for developing students' creativity. Additionally, the conclusion of this study is that teachers' attitudes towards creativity in teaching mathematics are not dependent on their professional preparation or age.

Keywords: creativity, characteristics of creativity, creativity in teaching Mathematics.

APPLICATIONS OF DESIGNS

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Abstract

The theory and designs are a subject of considerable interest in mathematics, not only in and of themselves, but for their connections with other fields such as geometry, group theory, graph theory, and coding theory. The main purpose of this work is to examine the relationship of designs in different areas of real life, to explore the conditions under which such designs exist, and their connection with t -designs. All of these will be presented through statements, proofs, theorems, and concrete examples. Through this work, various applications of designs are elaborated, highlighting their importance not only in different areas of mathematics but also in other scientific disciplines. The results from the research are interpreted through relevant examples of counterexamples, analyses, and comparisons of the theorems and statements taken from foreign literature, including various books and scientific papers.

Keywords: point, block, design, incidence matrix, group, code.

ANTICIPATION OF DYNAMICS AND IDENTIFICATION OF POTENTIAL FACTOR VARIABLES. A CASE STUDY

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Abstract

Based on this paper we have identified the true factor variables [X] and those responses [Y] for the given system. The first variable does not give a good match for any combination. This response variable is inappropriate for judging the system as a whole. Taking another variable that above resulted in a good logit regression, we see that the elimination of the first 2 variables does not significantly change the fit of the regression. Again, the regression is not very good, which indicates the presence of other factors included in this study, but for the case with 5 variables, the pepper has a good deal with all the variables. We note that the technique used with linear OLS and non-linear OLS can be well adapted to the logistic case. By imposing a practical balance between regression fitting goodness and the quality of the reproduction of the values for response variables, we realized to set-up a well-designed logistic model to analyze consumer behavior for a real market (district of Vlora). Basically the steps proposed herein have worked as data-oriented modeling methodology that reduce subjective or empirical approaches in econometric and marketing analysis.

Keywords: variable, consumer behavior, logistic model, linear OLS.

SOME COMPUTATIONS OF NUMERICAL SEMIGROUPS WITH EMBEDDING DIMENSION 3 ON GAP

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Abstract

The aim of this paper is to present some computations related to numerical semigroups with embedding dimension 3 on GAP and to present their applications for visualizing the different ways of buying certain products in market. The semigroup is given by a set of 3 generators. The algorithm produces simultaneously a presentation of the semigroup by generators and relations.

Keywords: Numerical semigroups, GAP Package, Minimal Presentation, Diagram.

CHAIN OF A SET IN A COVERING AND CHAIN COMPONENTS UP TO A COVERING

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Abstract

A chain in the open covering \mathcal{V} of a topological space X that joins $U \in \mathcal{V}$ and $V \in \mathcal{V}$ is a finite sequence of elements of \mathcal{V} such that U is the first member, V is the last member and every two consecutive members of the sequence have a nonempty intersection. By $chain\mathcal{V}, \mathcal{V} \in \mathcal{V}$ it is meant the union of all elements of the covering for which there are chains joining them with V and $chain\mathcal{V}$ is the set that consists of all sets $chainV$ for each $V \in \mathcal{V}$.

A chain in \mathcal{V} that joins $x \in X$ and $y \in X$ is a finite sequence of elements of \mathcal{V} such that x is contained in the first element of the sequence, y is contained in the last element and every two consecutive elements of the sequence have a nonempty intersection. A \mathcal{V} -chain component of an element $x \in X$, $Ch(x, \mathcal{V})$, is the set that consists of all $y \in X$ such that there exists a chain in \mathcal{V} that joins x and y .

We prove that $chainV = Ch(x, V)$ for any $V \in \mathcal{V}$ and any $x \in V$, hence $chainV$ consists of V -chain components. As a consequence, chain connectedness is characterized using the $chainV$ notion.

Keywords: Chain, Star of a set, open covers, Chain connectedness.

STUDY OF TIME SERIES FOR ECONOMIC FORECASTS USING MULTIFRACTAL ANALYSIS

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Abstract

In this study we will analyze the dynamics of time series with the idea of predicting the trend of an economic variable covering intervals in different periods such as the interest rate and the exchange rate. The time series under study are the exchange rate Euro/Lek, Dollar/Lek, the basic interest rate for the local currency (Lek) and the birth rate in Albania obtained by INSTAT and the Bank of Albania with monthly frequencies. This study contributes to the field of time series forecasts in Albania and modeling by means of multiracial analysis. With the created models, complete modeling will be performed between the series, offers and demands that are assumed to report changes in external influences and the effects of market forces. In addition to parallelism, non-linearity of the behavior of the data series and the specifics of the system itself, we understood to conclude on some features of the time series. So, the daily series of the Lek/Usd exchange rate is less stationary than the Lek/Euro. The evidence here supports the idea that the continuous injection of foreign exchange is among the dominant factors for the current level of the exchange rate level, but it is closer to the natural mean. Time series analysis was determined to be performed without considering the influence of external factors. This probably had its own effects on the results of the models.

Keywords: time series, modeling, prediction, exchange rate, log-periodic.

CHARACTERIZATION AND APPLICABILITY OF SOME SPECIAL TYPES OF MOORE GRAPHS

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Abstract

Various types of complex networks, such as telecommunication networks, are modeled using graphs whose vertices are telecommunication stations and whose edges are cables. During the construction of such networks, there are various restrictions on the vertices or edges. The condition is usually set on the highest degree of the vertex of that graph (that network) and on the diameter of the graph (in that network). When studying such graphs, two typical problems arise: (i) degree/diameter problem: for given natural numbers λ and L , it is necessary to find the largest possible number of vertices $n_{\lambda,L}$ of a connected graph whose largest degree is equal to λ , and whose diameter is less than or equal to L ; (ii) degree/girth problem: with the given natural numbers $d \geq 2$ and $g \geq 3$, the smallest possible number of vertices of a connected regular graph whose degree of regularity is equal to d and girth is g should be determined. The study of these two problems takes place in finding evidence for the non-existence of graphs whose number of vertices is very close to the upper limit for the number $n_{\lambda,L}$, called Moore's limit, numerous studies give results about the existence of graphs that improve the lower limit of this number. The main goal of this paper

is to study the problem of the existence of Moore graphs, that is, those graphs which, under the given conditions, have the number of vertices equal to the Moore's limit. In the introductory section of the paper, the fundamental concepts and basic properties of the Moore graph are precisely defined. Furthermore, all Moore graphs of diameter 2 are described, and special emphasis is placed on the very important Moore graph known as the Petersen graph. Numerous figures are also offered for a better insight into its structure. The last part of the paper is covered by the problem characterizations of Moore graphs of diameter 3.

Keywords: Moore graph, Vertex degree, Diameter of graph, Petersen graph.

DIFFERENCES BETWEEN THE CORRELATION COEFFICIENTS PEARSON, KENDALL AND SPEARMAN

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Abstract

The aim of this study is to compare the values of correlation coefficients such as the Pearson coefficient, the Kendall and Spearman coefficient. Pearson's coefficient values are taken from only studies conducted on the correlation of variables to be found in this study, while Kendall and Spearman's coefficient values account for the same variables and specifications to carry out this study. The earned values are compared to the purpose of seeing which coefficients have the closest values. After comparing the coefficient values it is concluded that the Pearson and Spearman coefficient have more close values than Kendall's coefficient.

Keywords: Correlation, nonparametric coefficients, Pearson coefficient, Kendall coefficient, Spearman coefficient, variable.

ERDOS-STRAUS CONJECTURE

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Abstract

In number theory, the Erdos-Straus conjecture states that for every positive integer, the rational number $4/n$ can be expressed as the sum of three unit fractions. Paul Erdos and Ernst G. Straus formulated the conjecture in 1948. In this paper we classify certain values of p that satisfy the Erdos-Straus conjecture, concerning the decomposition of fractions of the form as sum of three fractions with numerator identically equal to , according to their modular similarity and the fact that they share solutions with identical structure.

Keywords: Erdos-Straus, diophantine equation, unit fraction, egyptian fraction, prime numbers.

LOONGROB IN LOON

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Abstract

The loon package is designed to explore data interactively. Taking a graph as a photo does not have good quality and moreover the graph is not editable. One solution is to transform the graph into a static graph, not only for the high view of the loon graph, but also to allow the modifications in graphic. Grids are useful for creating publication-quality graphics.

In this article I shall describe an overview of graphics packages in the network focusing on the elements of the figures such as colour, point size and point shape from loon to grid.

The graphical system Grid, created from Murrell's (1998) doctoral thesis, later refined in the doctoral thesis of Phd student Zehao Xu, provides functionality in graphical abstraction. These new functions help data scientists with their studies. The loonGrob package must be installed by itself as it does not cover R.

In each geometric layer has two functions: one is “Grob” which produces a graphical object, named grob; the other is “grid” which draws the actual graphical output. A grob is composed of four main components: properties, graphics parameters, a viewport and a name.

The grid package also provides a gTree data structure that can have other 'grobs' or even nested gTrees as children. The construction of gTree (from grid.draw ()) is commonly used in the construction of genealogical trees.

Keywords: loon package, loonGrob, static chart, data, gTree.

FOR THE FOURIER TRANSFORM OF THE CONVOLUTION IN D' AND Z'

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Abstract

In this paper we give another proof of the known lemma which asserts that if $T \in D'$ with compact support and $\varphi \in \mathcal{S}$, then the Fourier transform of the convolution of distribution T and the function φ is equal to the product of their Fourier transforms, considering the Fourier transform of the convolution of a distribution and a function. The Fourier transform is a continuous linear mapping of D' onto Z' . Hence, if the series of distributions $\sum T_k$, where $T_k \in D'$ for $k = 1, 2, 3, \dots$ converges to the distribution T in D' then the series of its Fourier transforms converges in Z' . The Fourier transform of a distribution in Z' is a distribution in D' .

Also, we give its application in the mentioned spaces.

Keywords: Space D' , Space Z' , compact support, convolution, Fourier transform, inverse Fourier transform.

GENERALIZATIONS OF THE LEBESGUE INTEGRAL FOR FUNCTIONS WITH VALUES IN BANACH SPACES

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Abstract

In this paper are analyzed theorems on Lebesgue integral and its implementation using data from the earlier literature and updates that have emerged in recent years. Data were collected from books, magazines and various internet links.

Also, this paper covers some effort to verify the integral theorem of Lebesgue and solve any example via software.

Problems that addresses this paper are: formulation and proof of the Lebesgue integral and generalizations such are integrals Bohner, Pettis, Mcshein and integral of Henshtok - Kurcvail in Banach space using and computer analysis to find resolution of different problems.

In these paper we used for working WolframAlpha software, Mathematica.

Keywords: Lebesgue, WolframAlpha, integral.

EXPLORING THE TRIGONOMETRIC CIRCLE AND TRIGONOMETRIC LAWS WITH A GEOGEBRA VISUALIZATION

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Abstract

Mathematical functions that establish a relationship between the angles of a right triangle and the lengths of its sides are known as trigonometric functions. In this project, we will explore two of the six trigonometric functions and their properties using the trigonometric circle. Initially, trigonometric functions were defined only for acute angles related to right triangles. To extend the sine and cosine functions to functions whose domain is the entire real line, geometric definitions using the unit circle with radius 1 are often used. Then, the domain of the other trigonometric functions is the real line with some isolated points removed. Modern definitions express trigonometric functions as infinite series or as solutions of differential equations. This allows the extension of the definition of sine and cosine functions to the entire complex plane and the definition of other trigonometric functions on the complex plane with some isolated points removed. This project discusses the use of GeoGebra in studying trigonometric functions, Law of Sine and Law of Cosine. GeoGebra is a powerful mathematical software that allows for the visualization and exploration of trigonometric functions.

Keywords: Trigonometry, functions, sine, cosine, GeoGebra, visualization.

PHYSICS

DETERMINATION OF BULLET VELOCITY FOR AUTOMATIC RIFLES ASH-78 TYPE-1, ZASTAVA M70 AND NORINCO TYPE-56

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Abstract

The purpose of this research is to determine the bullet velocity of these weapons with emphasis AK-47 automatic rifles, specifically its versions “ASH-78 Tip-1”, “Zastava M-70” and “Norinco Type-56”. As they are very present today in the causing of many serious offenses such as murders, injuries, robberies, etc. The bullet’s velocity has a big role in causing damages or injuries to the impact bodies, whereas the higher the velocity it will carry on and transmit greater kinetic energy causing bigger injuries (damages). Therefore, ballistics experts are unavoidable to give their conclusions and face this phenomenon, so we have done experiments measuring the bullet’s velocity to those kinds of weapons. To realize those experiments we provided three types of weapons that are study objects and adequate ammunition. It also provided the equipment for measuring the bullet’s velocity “IMS 8500 Intelligent Measuring System”, which is a timing device for measuring the velocity of bullets. There were fifteen (15) shots with each weapon, divided by five (5) shots for three types of ammunition of the same caliber. Through this experiment, we have achieved results that the automatic rifle “Zastava M70” gives the bullet a higher velocity with all three types of ammunition. Based on the data above we have realized there are also calculated the horizontal throughput of bullets, where normally we have proven that

the weapon with the higher velocity of bullets reaches a farther distance. This research provides valuable information for ballistics experts and law enforcement agencies.

Keywords: bullets velocity, automatic rifles, ASH-78 Type-1, Zastava M-70 and Norinco Type-56.

THE ROLE OF DEMONSTRATIONS IN THE TEACHING AND LEARNING OF PHYSICS IN PRIMARY SCHOOLS

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Abstract

This study aims to analyze the role of demonstrations in the teaching and learning of physics in elementary schools. Focusing on a constructivist approach to teaching theory, this study aims to show how well-prepared demonstrations can help increase students' interest in physics, improve their understanding of difficult physical concepts, and enhance their problem-solving skills.

The methodology of this study is based on a quantitative and qualitative analysis of a small sample of students in elementary schools, through short surveys and interviews conducted by physics teachers and students. The results of the study showed that students who had completed physics demonstrations had more interest and motivation to learn, better understood difficult concepts, and were better prepared for laboratory exercises.

In conclusion, this study suggests that the use of demonstrations in teaching physics in elementary schools can be a powerful tool for improving the teaching and learning of this subject. Furthermore, this approach can be applied to other scientific disciplines and can help enhance students' ability to understand and solve complex problems in natural sciences.

The data obtained from research conducted with teachers and students were surveyed, and issues discussed with the focused group of teachers and students were interpreted, analyzed, and commented upon.

Keywords: Teaching, learning, demonstrations, physics.

SIMULATIONS OF RADIOTHERAPY TREATMENT PLANNING USING SOFTWARE MATRAD

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Abstract

Cancer is a significant global health problem causing nearly 10 million deaths in 2020. Today, almost half of cancer patients are treated with radiation in many radiotherapy centers around the world. These treatment methods use a very complex technology using photons or accelerated particles like electrons, protons or light ions that are directed toward the tumor target. The aim of radiotherapy is to deliver a high dose of radiation to the tumor cells, and at the same time to keep to a minimum dose received by the healthy cells near the tumors. Different computer software and platforms are used to calculate the delivery doses received from the tumor as well as from the healthy cells, contouring and all the steps necessary to make a protocol. These platforms with the help of diagnostic images do the localization of tumors, positions of nearby organs especially of organs at risk, and then also the position of the radiation beams, that is, the treatment planning, which is currently marked with TPS – Treatment Planning System. One of these systems that is widely used especially for training purposes matRad, an open-source cross-platform radiotherapy treatment planning toolkit enables three-dimensional intensity-modulated planning for photons, protons and carbon ions. Core functionalities to import DICOM data, to calculate and optimize

dose for different particles as well as a graphical user interface for visualization will be presented.

Keywords: Treatment planning system, particle RT, cancer treatment simulation, matRad.

WAVE -PARTICLE UNITY OF THE PHOTON

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Abstract

Einstein's photon theory accepts the co-existence of photons both as particles and as waves. They are opposite to each other, but in unity. This wave-particle unity of photons signifies that the adequate manner of description is determined through the chosen method of observation (propagation or interaction). The relationships, E and kp allow to be passed from one manner of description, to another. In this article, we will argue that the close relationship between these two manners of description has a statistical nature: the probability of photon localization to a point is proportional to the intensity of the light wave at that point, calculated by methods of classical optics.

Keywords: Photon, particle, unity, probability, wave functions.

THE “ATOMISM” OF ENERGY

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Abstract

This paper presents and explains to the reader the basic difficulties that classical physics faced when it extended into the area of the microscopic world. These difficulties arise when were made the first attempts to understand and explain the mechanism of interaction between matter and radiation. This interaction, according to classical physics, was imagined as a continuous process, while modern physics supports the discrete idea of interaction between matter and radiation. According to modern physics, the process of emission and absorption, i.e. the exchange of action between matter and radiation is carried out with minimal portions of energy, with quanta, which are proportional to the frequency of the radiation: . The proportionality coefficient "h" has the dimensions of action: Energy \times time. This new universal constant - the quantum of action - not only revised the classical concepts, but also solved a series of problems of the atomic world, where classical physics was "blocked". The solution of these problems, which led to the birth of a new theory - quantum physics - convincingly proved the great heuristic value of Max Planck's hypothesis.

Keywords: atomism, classical physics, quantum probability, quanta of action, interaction.

**3nd International Conference of Food Technology and
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ASSESSMENT OF THE ECONOMIC EFFICIENCY OF MILK PRODUCTION AMONG FARMERS IN POLOG REGION

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Abstract

Spearman correlation analysis was applied to analyze the data which shows a positive correlation between the number of cows and the number of family's $r_s = 0.778$ ($P < 0.01$); thus, the correlation is statistically significant with a confidence level of 70%.

The positive sign of the correlation coefficient indicates that this is a relationship between two variables in the same way; this means that the higher values of the number of family members correspond to higher values of the number of animals as well as the higher amount of milk production $r_s = 0,647$. Likewise, the correlation between grazing and income in milk is positive $r_s = 0.577$ ($P < 0.05$); thus, the correlation is statistically significant meaning that higher values of grazing in the high season are associated with higher values of milk income in the high season. The highest monthly amount of food fed to the farm was €2000, while the lowest was €140 per month. Statistical analysis revealed that the average amount of forage fed to each farm per month is €379 spent on concentrates, grass, silage, hay, and many others. Farmers in the study area mainly relied on purchased and self-grown fodder for their cows, implying that some farmers relied only on self-produced forage. The drought forced most farmers to rely on purchased fodder and their prices had risen due to high demand and low supply.

Keywords: sustainable farming, dairy products, value chain, small farmers, food safety.

CONSUMER'S BEHAVIOR ON SUSTAINABLE FOOD PACKAGING IN NORTH MACEDONIA

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Abstract

The paper investigates North Macedonian consumer behavior concerning sustainable packaging through quantitative research. The study aims to determine the perception of the North Macedonian consumer regarding the role of eco-packaging in forming sustainable behavior. To achieve it, the assessment of consumer preferences for the types of ecological packaging, including the reasons for purchasing green packaging, and the role of the information about eco-packaging in promoting sustainability, has been collected. Data was collected through an online survey implemented in the country's main cities with a total sample size of 342 respondents. Most respondents (56.73%) reported that quality is essential during buying packaged food products regarding their regional area distribution ($P < 0.05$). There was a highly positive correlation between consumers considering the environmental sustainability of product packaging and how they usually buy products with eco-friendly packaging. Kruskal Wallis test showed significant ($P < 0.05$) differences among the region areas considering the impact of packaging on the environment and the price of packaged food products. There was no statistical significance between the product brand and the food product's environmental impact ($P < 0.05$) during buying. The highest packaging preferences for bread (87.7 %), fruit and vegetables (58.2 %), and pasta and cereals (48.5%) include paper and, to a lesser extent, plastic. In conclusion, consumers are willing to consider labeling indicating the impact of packaging on the environment and

more product information to identify packaging sources while adopting a sustainable behavior.

Acknowledgments

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Keywords: food waste; food packaging; sustainable behavior; environmental protection; consumer acceptability.

FOOD SAFETY RISK ASSESSMENT -PUBLIC HEALTH ACTIONS AND CHALLENGES

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Abstract

Life expectancy of the population in North Macedonia in 2021 was 74.57 years. Cardiovascular diseases are the leading cause of death, after that malignant neoplasmas, endocrine, nutritional and metabolic diseases. National legislation for food safety is harmonized with European legislation for food safety. The basic law for food and feed safety has overall aim for high level of human health protection and consumer rights with integrated approach in food safety, from field to table. Public health sector perform risk assessment for some chemical hazards like dietary intake of lead and cadmium in adult population and the results has shown that daily intake for lead was 6.68 μg , for cadmium was 3.97 μg , of which vegetables and vegetable products participated with 2.12 μg , and cereals with 1.63 μg . Laboratory testing of mycotoxins has shown that we should continue to monitor these contaminants, because climate change creates favorable conditions for the growth of molds in a certain group of products. Early detection of microbiological hazards and prevention of risks arising from unsafe food in preschools, school institutions, student dormitories, hospitals and nursery homes where children, schoolchildren, students and chronically ill persons stay and eat are important activities performed each year by public health sector. We need to support and implement One Health approach for food safety and food borne diseases management on national and local level.

Keywords: food, public health, lead, cadmium, microbiological hazards.

NUTRIENT PROFILING MODEL AS PUBLIC HEALTH TOOL

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Abstract

Nutrient profiling is defined by the WHO as “the science of classifying or ranking foods according to their nutritional composition for reasons related to preventing disease and promoting health”. It provides a means of differentiating between foods that are more likely to be part of a healthy diet from those that are less likely. Nutrient profiling allows categorization of foods, not diets, but can be used in policy to improve the overall nutritional quality of diets. A nutrient profile model was firstly developed by the WHO Regional Office for Europe in 2015 and it was specifically for the purpose of restricting the marketing of foods to children. In 2023, WHO presented the updated model, taking into account lessons learnt during adaptation of the model by Member States of the Region and by other WHO regional offices. Previously, WHO developed Nutrient and Promotional Profiling Model (NPPM) for infant and baby foods. In North Macedonia, research was conducted based on the draft of the 2015 model, in which we concluded that none of the foods examined were suitable for marketing to children. This lecture will present the NPPM and the updated 2023 model and examine the possibilities for its implementation as public health prevention tool in the national context.

Keywords: nutrition profile, foods, composition, health.

RHEOLOGICAL ATTRIBUTES OF THE DOUGH OBTAINED FROM CERTAIN WHEAT CULTIVARS IN KOSOVO FROM IMPORT

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Abstract

The rheological attributes of the dough play a crucial role in the determination of the technological attributes of the wheat, respectively of flour and bakery products. There are various methods that are used in the determination of the rheological attributes, and to this end, one utilizes numerous pieces of equipment. In our study, we utilized Farinograph and Brabender Extensograph as well as the concept known as "Falling Number".

From the obtained results with Farinograph, one observes more favorable rheological attributes with the dough from cultivar Luna, which indicates a development period of dough of 4.0 minutes, stability of dough 6.0 minutes, and a degree of softening of only 70 FU. The results that are obtained with Extensograph also indicate that the dough from cultivar Luna has better rheological attributes, with a pulling of 180 mm, maximum resistance of 315 EU, R/E ratio of 1.8, and energy of 65 cm², which are characteristic for the production of quality bread. The falling number for all the cultivars is rather high, which indicates that the amylolytic activity is low; that is, the produced bread will have a dry and crunchy inner part and a low volume; therefore, there is a need for the utilization of amylases in these instances.

Keywords: rheological attributes, Farinograph, falling number, dough, amylolytic activity.

GENERATIONS AND TYPES OF RADIOACTIVE WASTE THAT AFFECT THE SURROUNDING ENVIRONMENT

Besire CENA

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Abstract

Radioactive wastes that are produced in the mentioned practices change or vary in form, concentration in activity and type of pollution as they are in the generated type of action. They can be solid, liquid or gas. Activity concentration levels range from high levels of radioactive waste to very low levels related to the applications of radioisotopes in laboratories, hospitals, etc. Equally wide is the range of half a century of radionuclides included in radioactive waste, their action in the environment that surrounds them. In this paper, the main waste generating practices and the types of radioactive waste generated by each practice are briefly and qualitatively described. Institutional use of radioactive materials includes practices in the fields of research, industry and medicine. These practices, especially in the field of research, are very diverse and result in the generation of waste of different classes.

Keywords: activity, radionuclides, environment, radioactive waste etc.

ANTIOXIDANT ACTIVITY AND POLYPHENOLS CONTENT OF BLUEBERRY (*VACCINIUM MYRTILLUS L.*) OBTAINED FROM DIFFERENT ALTITUDE SAMPLES IN SHARR MOUNTAIN

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Abstract

Blueberry (*Vaccinium myrtillus L.*) is considered as one of the fruits with the highest antioxidant activity due to the high content of phenolic compounds. The purpose of the study is to evaluate the content of physico-chemical properties, phenolic compounds, and antioxidant capacity of blueberry fruits in three localities in Mount Sharr. Special attention was given to the determination of the total phenolic content of blueberries, and the antioxidant activity of the fruit related to geographic height and width. Three blueberry samples were taken and analyzed from localities: M1 (Kobilica, 1936m altitude), M2 (Kodra e Diellit, 1698 m), (Shipkovica, 1829 m), M3 (Cultivated, 500 m). Based on the environmental conditions that prevailed during the vegetation, the M1 blueberry populations recorded significantly higher values ($P < 0.05$) of polyphenol content expressed as equivalents of Gaellic Acid per Dry weight 651.36 ± 0.50 mg GAE/100g. Also, blueberry samples M1 and M2 showed greater amounts of antioxidant values (717.72 ± 17.17 DPPH mgTE/100g) compared to sample M3 (447.68 ± 18.73 DPPH mgTE/100). Sample M3 is characterized by the significant ($P < 0.05$) higher dry matter values (18 g/100g) as well as higher total acidity (1.32%) then the other samples. In conclusion, Blueberry fruits grown in highest altitude were considered a potential source of antioxidants for consumption both fresh and processed.

Keywords: blueberries, areas, acidity, antioxidants, polyphenol content.

FTIR SPECTROSCOPY STRUCTURAL ANALYSIS OF THE INTERACTION BETWEEN LIPIDS AND METAL IONS

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Abstract

FTIR spectroscopy was used to study the chemical interaction of triglycerides present in edible oils with metal ions (Cu²⁺, Zn²⁺). Heavy metals pollution it has high impact in chemical changes of the normal oil components such as triglyceride as the major oil components especially during their thermal treatments. The edible oil was monitored by iodine value and peroxide number and finally by vibrational Spectroscopy. The infrared spectra indicate that the metal/lipid interaction occurs mainly through the carbonyl groups of the ester and the olefin double bonds which indicate occurring of the lipids peroxidation especially initiated from metal as a pro-oxidant.

Vibrational Spectroscopy bands such as ratio of intensity peaks 3473/2854, 1745/2854 and 3010/2854 as important indicator for the observation of the trend the lipid peroxidation in edible oils.

As a result, it is revealed that heated oil with different ion metals has significant chemical transformations and evidence of the interaction between triglyceride and metal ions compare with pure heated oil as a control samples. Lipid peroxidation occur in interaction between

lipids a metal ion as pro-oxidant it is crucial initiate reaction for next changes which occur in oil composition. Finally, contamination of edible oils by heavy metals generates a lot of chemical transformations in the crucial oil components especially lipids and their conversion in mixture of oxidized compounds most of them probably by toxicological effect.

Keywords: ratio intensity, interaction, FTIR Spectroscopy, lipid, metal ion.

INVESTIGATION THE IMPACT OF LOCAL BEAN FLOUR ON THE NUTRITIONAL AND SENSORY PROPERTIES OF BISCUITS

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Abstract

Biscuits are commonly used by a wide range of populations around the world and in our country. They are food products produced from soft wheat flour with an attractive taste and aroma for the consumer, high sugar, fat, and energy content, but poor in other nutritional values. Based on this, this study aims to improve the nutritional value of biscuits and maintain or improve the sensory and textural properties by replacing wheat flour with local bean flour, and that with 10, 15, 20, 25, and 30%.

The obtained results showed that the nutritional values of biscuits generally increase with the increase in the content of bean flour in them, so that biscuits with 30% bean flour had a higher content of minerals and proteins, while biscuits with 25% bean flour had a higher content of fats and invert sugar. Regarding the sensory properties, the significantly better ones were in the biscuits with 5% bean flour. Of all the textural properties analyzed, biscuits with 20% bean flour had better textural properties such as hardness, smoothness, chewiness, and firmness. From here, we can conclude that the addition of bean flour affects the reduction of sensory and textural properties; therefore, it can only be added up to 20% in the production of biscuits.

Keywords: bean flour, nutritional values, sensory properties, biscuits.

EFFECT OF SORGHUM SOURDOUGH ADDITION ON THE QUALITY OF WHEAT BREAD

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Abstract

Sorghum flour is a gluten-free flour that is made from the sorghum grain, which is a cereal crop commonly grown in Africa, Asia, and the Americas but also in Poland. It has a mild flavor and a slightly sweet taste, making it a popular alternative to wheat flour for those with gluten sensitivity or celiac disease. Making the dough with the use of sourdoughs from non-bread cereals, e.g. sorghum, can increase the sensory and health-promoting values and extend the shelf life of baked goods. The aim of this study was to assess the quality of wheat bread from wheat flour type 750 (ash 0,75%) with the addition of sourdough from three varieties of sorghum grown in Poland (Capello, Fuego, Zsofia). Sorghum sourdough was carried out using LV1 (Lesaffre) starter cultures (0.5% of flour weight) for 20 hours at 30 °C with a yield of 250. The share of sorghum flour in wheat bread was 0, 5, 10 and 15%. Bread was assessed on the basis of physical characteristics (crust and crumb color, overbake, volume, crumb porosity), organoleptic evaluation, texture profile analysis test (TPA) and total ash and protein content. The share of sorghum flour in wheat bread in the form of sourdough in the amount of up to 15% had a positive effect on its quality characteristics and pro-health value by

increasing the content of total protein and ash. No negative impact of the sorghum content on the quality and general acceptability of the obtained bread was found.

Keywords: wheat bread; sorghum; sourdough; quality.

RYE DIETARY FIBER MODIFICATION BY INOCULATED PROBIOTIC FERMENTATION

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Abstract

Rye flour is used as the main ingredient of sourdough bread which has technological and gastronomic benefits and increased nutritional value. Transformations observed during fermentation and baking may enable the conversion or degradation of rye dietary fiber carbohydrates built mainly of arabinoxylans, fructans, and β -glucans. This study aimed to determine the dynamics of changes in the contents of complex carbohydrates in sourdoughs inoculated with the use of potential probiotic microorganisms as well as the polysaccharide composition of resulting bread. Sourdoughs were inoculated with potential probiotic microorganisms: *Saccharomyces boulardii*, *Lactiplantibacillus plantarum*, *Lacticaseibacillus rhamnosus* and *Bacillus coagulans* and spontaneous fermentation was performed as a control. Samples of sourdoughs after 24 and 48 hours of fermentation and of bread obtained with these sourdoughs were analyzed for the content of individual dietary fiber components. The present study demonstrated that the treatments applied contributed to an increased total content of arabinoxylans in the breads and that the inoculation of sourdoughs with potential probiotic strains improved their solubility in water. The use of *S.boulardii* strain may seem prospective as it allowed for the greatest reduction of fructans in rye

bread. Rye sourdough bread is an attractive source of dietary fiber and can be modified for different nutritional needs.

This research was funded by National Science Centre of Poland, grant number 2021/05/X/NZ9/00511.

Keywords: dietary fiber; sourdough fermentation; probiotics; arabinoxylans; fructans; β -glucans.

PROBIOTIC FERMENTATION IMPACT ON WHEAT DIETARY FIBER COMPONENTS

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Abstract

Wheat flour is a common ingredient in sourdough bread, and its use can provide various benefits. Sourdough fermentation helps to provide the texture to the bread, while also affecting its flavor and aroma. The fermentation process that occurs during the making of sourdough bread can increase the nutritional value of the bread. During the process of fermentation and baking, the dietary fiber carbohydrates in the flour, such as arabinoxylans, fructans, and β -glucans, may undergo conversion or degradation. This research aimed to investigate how the content of complex carbohydrates in sourdoughs changed when they are inoculated with potential probiotic microorganisms, and to determine the polysaccharide composition of the resulting bread. The sourdoughs were inoculated with four different microorganisms: *Saccharomyces boulardii*, *Lactiplantibacillus plantarum*, *Lactocaseibacillus rhamnosus*, and *Bacillus coagulans*, and a control sourdough underwent spontaneous fermentation. Samples of the sourdoughs and bread were taken after 24 and 48 hours of fermentation, and the content of individual dietary fiber components was analyzed. The use of sourdough fermentation led to a reduction in starch content and an increase in arabinoxylans solubility in the resulting bread. The bread produced from sourdough inoculated with potential probiotic microorganisms had higher β -glucan content than both the control bread and the bread produced

from spontaneous fermentation. Sourdough inoculated with *S. boulardii* resulted in the highest reduction of fructan content in the bread and the highest content of soluble dietary fiber.

This research was funded by National Science Centre of Poland, grant number 2021/05/X/NZ9/00511.

Keywords: dietary fiber; sourdough fermentation; probiotics; arabinoxylans; fructans; β -glucans.

IMPACT OF SORGHUM SOURDOUGH ADDITION ON THE QUALITY OF RYE BREAD

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Abstract

Sorghum is a gluten-free grain, which is a cereal crop commonly grown in Africa, Asia, and the Americas but also in Poland. Sorghum flour has become increasingly popular in recent years as more people are seeking out gluten-free alternatives to traditional flours. Making the dough with the use of sourdoughs from non-bread cereals, e.g. sorghum, can increase the sensory and health-promoting values and extend the shelf life of baked goods. It is a particularly interesting ingredient for the production of rye dough requiring leavening. The aim of this study was to assess the quality of bread baked from rye flour type 720 (ash 0,70%) with the addition of sourdough from three varieties of sorghum grown in Poland (Capello, Fuego, Zsofia). Sorghum sourdough was carried out using LV1 (Lesaffre) starter cultures (0.5% of flour weight) for 20 hours at 30 °C with a yield of 250. The share of sorghum flour in rye bread was 0, 5, 10 and 15%. Bread was assessed on the basis of physical characteristics (crust and crumb color, overbake, volume, crumb porosity), organoleptic evaluation, texture profile analysis test (TPA) and total ash and protein content. The sourdough rye dough with sorghum in the amount of up to 15% resulted in obtaining bread of good quality and high nutritional value.

Keywords: rye bread; sorghum; sourdough; quality.

MONITORING OF SOME PARAMETERS OF QUALITY AND MICROBIOLOGICAL SAFETY IN DRINKING WATER

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Abstract

Knowing that the water used for drinking is the most important product in our life, but its greatest importance comes as a result of the fact that water is present in higher quantities in all food products. In order to prove that the water is of better quality and safety, it must undergo some controls like: sensory, physical, chemical and microbiological analyzes in the laboratory. The monitoring of some parameters in this paper is important both in terms of quality and in particular that of microbiological safety, because the importance of the water like final product. The parameters that have been analyzed are: water temperature, pH scale, electrical conductivity, turbidity, general hardness and the total number of microorganisms. From the analyzes performed, the results were obtained: temperature 13°C, electrical conductivity 208±0.1 µS/cm, pH 8.09±0.01, turbidity 0.2±0.1 NTU, total hardness 3.2±0.1 °dH and the amount of chlorine 0.2±0.1 mg/L. From the microbiological point of view, the water was free of microorganisms. After receiving the results, we have a real overview during this study, for the qualitative character and microbiological safety for the analyzed parameters.

Keywords: Water, hardness, turbidity, pH, electrical conductivity, chlorine, microbiological.

INFLUENCE OF CHICKPEA AND FLAX SEED FLOUR ON THE NUTRITIONAL AND SENSORY VALUES OF BISCUITS

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Abstract

Biscuits are a food product that is consumed by all age groups of the population in the world and in us; known as food products rich in carbohydrates, fat, and energy but poor in essential amino acids, vitamins, minerals, and dietary fiber. This paper tries to enrich the wheat flour by adding 10 and 20% chickpea flour, 10 and 20% flax seeds flour, and 10+10% chickpea and flax seeds flour to increase the nutritional value and preserve the sensory properties of the biscuits.

Based on the results obtained for the nutritional values of the biscuits, it is observed that the biscuits with 20% chickpea flour had a higher protein, cellulose, and ash content, while the biscuits with 20% flax seeds flour had a higher content of fat and energy (462.71 kcal/100 g). Regarding the content of minerals, biscuits with 20% chickpea flour had a higher Na and K content, while biscuits with 20% flax seeds flour had a higher content of Ca, Cu, Zn, and P. Sensory properties of biscuits that are more valuable to consumers showed biscuits with only 10% chickpea flour and with a total accumulated score of 16.69, which falls into the very good quality group; other biscuits were in the good quality group.

Keywords: flax seeds flour, cellulose, minerals, sensory properties, biscuits.

NUTRITIONAL EXPRESSIONS OF YOUNG PEOPLE FROM THE REGION OF POLLOG IN THE CONSUMPTION OF DIFFERENT BREADS

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Abstract

Based on the fact that bread is the food product that is consumed the most in our country and that it is consumed in the three main daily meals, research suggests that "healthy" food choices such as the consumption of wholemeal bread that is rich in dietary fiber, minerals, and vitamins have not only health but also mental benefits and can be a long-term investment in the health and well-being of the population in the country. However, this view contradicts the belief so far that white bread with high calories tastes better and makes us happy, compared to wholemeal bread, which is not as tasty and pleasant.

Therefore, in order to offer a more complete assessment between the choice of white and wholemeal bread, we conducted a survey on the preferences of young people from the region of Pollog, the municipality of Tetova, with 43 respondents, and the municipality of Gostivar, with 39 respondents, for these two types of bread. The results obtained showed that although most of the young people knew the nutritional value of breads, such as the content of carbohydrates, proteins, dietary fibers, minerals, and vitamins, as well as their health benefits, a total of 67.2% of them preferred to consume white bread. This means that even though they have knowledge about the nutritional and health values of bread, the respondents have not changed their eating habits.

Keywords: wholemeal bread, dietary fibers, Pollog, eating habits.

THE ROLE OF RULE AND TIMING OF MEALS AS FACTORS IN DEALING WITH INCREASED BODY WEIGHT

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Abstract

Today, obesity is the most common nutritional disease whose occurrence is multifaceted. Obesity is not only an aesthetic problem, but also a major health problem that is the basis for a series of health complications. The method of dealing with obesity is of particular interest to scientists from several fields, so over time various methods have been proposed to deal with it, from behavioral, alternative nutritional and medical methods.

In nutritional treatments for weight loss, it has been established that there are variations between individuals in terms of the intensity with which the pounds will be lost. Those variations relate to the type of diet, physical activity, and the emotional factor of the individual.

In this review, emphasis is given on the correct and timely and distributed consumption of meals and the introduction of regular physical activity as one of the first ways to deal with obesity and obesity.

Literary data suggest that regular intake and adherence to the time period of intake, with an emphasis on regular breakfast consumption, are effective methods for preventing long-term weight gain. Eating

meals later (after 3 pm) results in difficulties in weight loss Eating meals 5-6 hours apart and not eating at night can be a useful practical strategy in the fight against excess weight.

Keywords: obesity, regular meals, breakfast, alternative methods.

THE INFLUENCE OF THE CHOICE OF FOODS EATEN ON ANTHROPOMETRIC PARAMETERS AMONG ADOLESCENTS OF CHRISTIAN AND MUSLIM FAITH IN THE REPUBLIC OF NORTH MACEDONIA

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Abstract

The adolescent period represents the most turbulent life phase of each individual, followed by major physical, psychological, hormonal, cognitive changes. Such changes also bring special needs towards food, and habits acquired during this period of life have an impact on the health of the body throughout life. Nutrition is the most important and dynamic ecological phenomenon on which all phases of human growth and development depend, and availability and civilizational approach to meal preparation, and in some cases religion, have an influence on food.

The choice of foods in the adolescent period has a great influence on the assessment of the nutritional status expressed primarily through anthropometric parameters. Anthropometric parameters in childhood and adolescence are expressed in percentile curves and differ from standard calculation methods.

What is the choice of food and how it affects the anthropometric indicators in adolescents of Christian and Muslim religion is the subject of work of this paper. 409 respondents from different schools in the territory of the city of Skopje were examined, and the entire adolescent period from early to late adolescence was covered. The survey was conducted in October 2019. An anonymous questionnaire consisting of 51 questions of a mixed nature was filled out.

The results showed significant differences in the choice of foods that dominate the diet among adolescents compared between gender and religion and they directly affect anthropometric parameters among adolescents.

Keywords: adolescence, food choice, religion, anthropometry.

3D PRINTERS FOR FOOD APPLICATION

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Abstract

3D printing technology has revolutionized manufacturing, enabling the creation of complex, three-dimensional objects from digital designs. In the food industry, 3D printing offers a new way of producing complex food products that cannot be easily created using conventional methods due to their unique geometry and internal structure. However, the translation of 3D printing technology to the food industry has proven challenging due to the complex composition of food materials, which includes both building structure ingredients and plasticizers. Several 3D printers have been developed for use in food printing, including extrusion-based, binder jetting, inkjet, and selective laser sintering printers. Despite the challenges, 3D printing technology has enormous potential to transform the food industry. On-demand, local production could simplify the supply chain and expand the range of ingredients used in food production. Personalized nutrition and consumer empowerment could also be achieved. Further research and development are needed to overcome the limitations of existing printers and to develop new printers that can meet the unique challenges of food printing. The choice of 3D printer used for food printing depends on the specific needs of the user, and careful consideration of the advantages and drawbacks of each type of printer is required to choose the most suitable printer for a given application. Despite the various design concept only few solutions were ready enough to reach the market.

Keywords: 3D printing, food printing, market ready, extrusion printing.

THE CHANGE IN ANTIOXIDANT ACTIVITY CHARACTERISTICS OF TEFF FLOUR AFTER MICROWAVE SUPPORTED HEAT-MOISTURE TREATMENT D

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Abstract

The use of microwaves for the physical modification of flours and starches is a fast and more effective alternative to conventional hydrothermal treatments that is still poorly studied. In this study, microwave treatments were carried out with buckwheat flour, which is a gluten-free pseudocereal flour notable for its high protein content and its phenolic and antioxidant compounds.

Hydrothermal treatments (HMT) can be applied to food through a wide variety of procedures. The application through microwave radiation (MW) has been increasing its interest in recent years. Microwave energy has the characteristic of being a non-ionizing energy whose foundation lies in the rapid alternation of high-frequency electromagnetic fields within the products subjected to said radiation, producing an increase in temperature in them, due to the friction between the molecules at the same time quickly orient themselves towards these electromagnetic fields. The studied factor was the initial humidity of the samples while treatment time remain the same.

Mixed variety (white and brown) of teff (*Eragrostis tef*) cultivated in Spain (Salutef, Spain) was adjusted to 20%, 25% and 30% of initial moisture content with distilled water. The treatment was proceed during 13 min in NOVA10 microwave reactor (Ertec, Poland) supported by OpenMagnumV2 Software (Ertec, Poland). The grain was exposed to microwave treatment, then dried, milled and total polyphenol content TPC, antioxidant activity vs. DPPH and ABTS and reducing activity by FRAP and DNS were measured. The significant changes defendant on initial moisture content were observed.

Acknowledgments

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Keywords: teff flour, microwave radiation, antioxidant activity.

ORGANIC ACID AND PHENOLIC COMPOUNDS PROFILES OF MONOFLORAL THRACIAN HONEYS

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Abstract

In this study, organic acid and phenolic compounds profiles of 5 different monofloral Thracian honey samples were studied. Honey samples were obtained from local beekeepers in different regions. Melissapalynological analysis were carried out to verify the origins of monofloral honeys. Honey samples were prepared accordingly for chromatographic analysis. Total of 55 organic acids and 34 phenolic compounds were analyzed with LC-MS/MS (liquid chromatography coupled with tandem mass spectrometer). While Lactic acid (46.08%) and Citric acid (28.94%) were the most abundant organic acids among 55 organic acids; Lactic acid for Sarmaşık and Meşe; Citric acid for Karaçalı, Ayçiçeği and Kazotu honeys were observed to be dominant respectively. Protocatechuic Acid (27.68%), Gallic acid (16.30%) and Caffeic acid (11.30%) were determined to make up the bigger percentage among 34 phenolic compounds. As for phenolic compounds, Protocatechuic Acid and Gallic acid amounts of Meşe honey were observed to differ significantly than other honeys. As a result of LC-MS/MS analysis, it was determined that Meşe honey had the highest amount of phenolic compound content and Sarmaşık honey had the highest amount of organic acid content among 5 different honey samples. In conclusion, phenolic compounds and organic acid profiles of honeys may differ according to their origins and their taste.

Keywords: Honey, Chromatography, LC-MSMS, Phenolic compounds, Organic acids.

CURRENT CONCEPT OF USING RAPESEED OIL IN OLEOGELATION

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Abstract

The oleogelation process makes it possible to change the form of vegetable oils, giving them the properties of solid fats while maintaining the nutritional profile characteristic of liquid oils without the participation and presence of lipids with conjugated trans double bonds and unfavorable saturated fatty acids. In order to stabilize such fatty structures, various types of oleogelators are used, including polysaccharides of natural origin (e.g. agar). At the same time, studies prove that a significant influence on the physicochemical parameters of the products obtained as a result of oleogelation has the type of oil used for this process. Depending on the type of oil used in oleogelation such as refined oil or cold-pressed oil, we can obtain oleo-gels with different physicochemical properties and thus affect the parameters of the food product. The use of the right vegetable oil can significantly change the physicochemical parameters of oleogels and thus allow us to obtain oleogels with optimal properties and can have a key impact in the future on their potential use in food technology. An excellent choice of oil for the production of oleogels may be rapeseed oil. Obtained from double-improved varieties, it is a versatile oil that is suitable for both industrial and food purposes, and additionally we obtain one of the healthiest oils in human nutrition, i.e. with a low content of saturated acids and a high amount of polyenoic fatty acids and the presence of bioactive compounds. Thanks to its physicochemical properties, but also the compactness of

many valuable nutrients (rich in rare gamma-linolenic acid) and taste, rapeseed oil can be used in the future in the process of oleogelation.

Keywords: oleogels, oleogelation, rapeseed oil.

THE PROSPECT OF USING OLEOGELS IN BAKERY PRODUCTS

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Abstract

In recent years, interest in the oleogelation process has increased significantly due to its potential use in the food, pharmaceutical or biotechnology industries, among others. Oleogels obtained by oleogelation may in the future become a promising alternative to fats hardened by chemical transformations and thus may eliminate or replace them in food products. Oleogels, thanks to the fact that they are obtained by oleo-gelation where the predominant interactions are physicochemical interactions that enable the formation of this type of structure, are devoid of the presence of harmful lipids with trans-bond configuration as well as saturated fatty acids. Applications in the form, oleogels in the food industry can be used successfully in bakery and confectionery. Oleogels can become an excellent substitute for previously used fats such as margarine or butter and with retained nutritional value become a functional additive in food. Recent literature reports show that oleogels can be successfully used as replacements for previously used fats in dough and thus in bakery products.

Keywords: olegels, olegelation, rapeseed oil.

ANTIOXIDANT ACTIVITY AND CONTENT OF POLYPHENOLS IN THE FRUITS OF SELECTED HYBRID GRAPEVINES FROM POLAND

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Abstract

Hybrid grapes are perceived as fruits of high nutritional value, which simultaneously contain many bioactive ingredients that have a beneficial effect on health. The antioxidant properties and the content of selected polyphenolic components in the fruits of five hybrid vines grown in Poland were characterized. The highest mean antioxidant activity, measured by DPPH method, was observed in grape skin, which ranged from 3.31 mg to 4.34 mg of Trolox equivalent, for Alwood and Beta, respectively. The highest mean AA of the skins as measured by the ABTS method, ranging from 2.36 mg to 6.60 mg TE/g f.m. found in grape skins for Alwood and Beta varieties, respectively. The highest average reducing activity in grape skin, ranging from 2.33 mg to 4.08 mg FeSO₄-2/g f.m., was observed for the Beta and Alwood cultivars, respectively. The highest mean total polyphenolic compound content was observed in grape skin, which ranged from 2.58 mg to 16.33 mg gallic acid equivalent/g f.m. for the Beta and Alwood variety respectively. The highest value of total flavonoid content was observed in the flesh of fresh fruit, where the flavonoids ranged from 133.6 to 311.2 µg of quercetin equivalent /g f.m. for Michigan and Alwood, respectively. The conducted research shows that non-commercial varieties of hybrid grapevine can be a valuable raw material for food applications.

Keywords: hybrid grapes, antioxidants, polyphenols, reducing activity.

THE EFFECT OF SELECTED HEAT TREATMENT TECHNIQUES ON THE BIOACTIVE PROPERTIES OF BELL PEPPERS

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Abstract

Vegetables and fruits when preparing dishes from them are often subjected to heat treatment. As a result of thermal processing techniques, unprocessed plant materials acquire various bioactive properties. The aim of the study was to investigate the effect of selected thermal methods such as cooking, steaming, microwave or grilling on the total antioxidant capacity (TAC) and the content of polyphenolic compounds in red, yellow and green bell peppers. The TAC was analyzed for both fresh and treated thermal bell peppers. Thermal treatments were performed in standard times for individual methods in consumer use.

In methanol homogenates, the antioxidant potential was assessed using the DPPH, ABTS and FRAP methods, as well as the content of polyphenols using the F-C method. All methods of thermal treatment caused significant ($p \leq 0.05$) changes in the TAC and in the total polyphenol content in bell peppers. The TAC was reduced to a greater extent due to the interaction of microwaves and traditional cooking (in hot water). The greater reduction of the total polyphenol content was observed in bell peppers which has undergone traditional cooking. The smallest changes in the antioxidant activity and the content of polyphenolic compounds were observed in bell peppers subjected to steam cooking.

Keywords: thermal treatments, bell peppers, antioxidants, polyphenols.

BOTANICAL EXTRACTS AS ANTI-AGING PREPARATIONS FOR THE SKIN

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Abstract

Although topical creams and other anti-aging products purport to reduce the appearance of aging and skin wrinkling, there has been no critical analysis in the scientific literature of their effectiveness. This systematic review critically evaluates the evidence for the effectiveness or efficacy of botanical treatments in reducing skin aging and wrinkling.

We should put on face what we can eat to get the most effective way to using the nature. For this purpose, we used three different herbal extracts Hibiscus Sabdariffa, Rosa Canina and Trifolium pratense, which have the very high antioxidant capacity that helps for wrinkle reducing and slow down the ageing of skin.

Methods: Detection of total phenols with TPC assay, also known as the Folin-Ciocalteu (FC) method, is well established and uses the FC reagent to oxidize phenolic compounds, For the detection of total flavonoids we used TFC method , the basic principle of Aluminium chloride colorimetric method is that Aluminium chloride forms acid stable complexes with the C-4 keto group and either the C-3 or C-5 hydroxyl group of flavones and flavonols.For the detection of radical-scavenging activity we used DPPH method, DPPH free radical method is an antioxidant assay based on electron-transfer that produces a violet solution in ethanol.With this three method we used

methanol extract of hibiscus and glycolic extracts of rosa canina and trifolium pratense.

As a conclusion with mixing up of this three herbal extracts we got a product which can be used daily, with very high effectivity for fighting wrinkles and skin ageing

Keywords: nutricosmetics, herbal extracts, anti-ageing, topical creams.

NUTRICOSMETICS: USING OF BOTANICAL EXTRACTS FOR ATIAGING PURPOSE

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Abstract

Nutricosmetics is the point at which nutrition and cosmetics meet. The term encompasses the beneficial effects on beauty resulting from the use of food supplements. This new addition to the beauty routine consists of ingesting nutrients or active ingredients, whose function is to deeply nourish skin, hair, and nails.

This systematic review critically evaluates the evidence for the effectiveness or efficacy of botanical treatments in reducing skin aging and wrinkling. For this purpose we use three different herbal extracts Hibiscus Sabdariffa, Rosa Canina and Trifolium pratense. The three of them have high antioxidant effect which is usefull for wrinkle and slows down the aging of skin.

Hibiscus sabdariffa (Sorrel of Guinea or Roselle) is an herbaceous shrub of the Malvaceae family. Red flowers, dried and infused, are used for the preparation of karkade, the traditional beverage consumed very fresh in West Africa. It is also valued for many food applications thanks to its polyphenols content that offers antioxidant benefits.

Dog rose (Rosa canina L.) is a wild native species in Iran, with asignificant genetic diversity. This plant serves as a rich source of vitamin C, anthocyanins, phenolic contents and carotenoids.

While red clover (*Trifolium pratense*) may not be as well-known an ingredient in skin care as say, green tea or grape seed extracts, this plant has amazing antioxidant benefits to help maintain the youthful and plump appearance of the skin.

As a conclusion with mixing up of this three herbal extracts each one per 2 gr we got a product in the form of sachets which can be used once a day with very high effectivity for fighting wrinkles and skin ageing.

Keywords: nutricosmetics, herbal extracts, anti-aging, food supplements.

MICROBIOLOGICAL SAFETY OF DAIRY PRODUCTS OBTAINED FROM A DAIRY STORE

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Abstract

Dairy product consumption is an important part of the populations' diet in North Macedonia. While the majority of the dairy products are packaged, most of them can be obtained from special stores that sell dairy products in bulk. Food poisoning can be caused by different types of pathogens, and their presence is due to direct contact with contaminated sources in the farm, milk and dairy production, up to the handling with the products in the dairy stores. This paper provides information for the microbiological safety of dairy products, obtained from special dairy stores in Bitola, North Macedonia. The purpose is to highlight the main contaminants in dairy products handled in the dairy stores, and to propose proper precautionary and control measures. A total of 85 samples of dairy products were collected and tested for four different pathogens (*Echerichia coli*, Coagulase positive staphylococcus, and *Listeria* spp.) as determined by the Official Gazette No. 100 from 2013 and *Salmonella* spp., from which 50 were obtained from a dairy store in bulk, and 35 of the same products were obtained from the store packaged. Among the samples, the presence of *Escherichia coli* and Coagulase positive

staphylococcus was detected in most of the samples, Salmonella spp. and L. monocytogenes was not detected in any of the products, and Listeria spp. was detected in ten dairy products.

Keywords: microbiological safety, dairy products, dairy store, contamination.

PHYSICOCHEMICAL ANALYSIS AND SENSORY EVALUATION OF ACACIA HONEY

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Abstract

Honey in our country, attributed to its nutritional value, energy source, therapeutic and antibacterial properties, starting from the healing properties and benefits of honey. During the last years, especially in the years of the "Covid-19" pandemic, the demand for honey has increased significantly, as a result of the influence of honey in increasing immunity, this is influenced by the "advertisement" of its properties or qualities as a product natural, that can be used as an energy source, but also its uses in traditional medicine. The purpose of this paper is to determine the sensory and laboratory analysis. For these analysis were obtained two samples of Acacia Honey. Sensory analysis were performed such as: purity of honey, color, clarity, aroma, characteristic aroma, intensity of aroma and taste, where the evaluation criteria were from 1 to 5 points. The total points obtained from the evaluation of the first sample is 22, while in the second one is 24. Physicochemical analysis were carried out in the laboratory of the Faculty of Food Technology and Nutrition, as listed below: moisture content with the refractometric methods, dry matter with the drying methods, pH value with a pH meter, electrical conductivity with the potentiometric methods and carbohydrates with the Feeling test methods. From the results obtained in the laboratory we can conclude that both of the samples are within the allowed limits that are determined according to the Harmonized methods of the international honey commission.

Keywords: Honey, physicochemical analysis, sensory evaluation, Acacia Honey.

SPECTROPHOTOMETRIC DETERMINATION OF CAFFEINE IN COFFEE

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Abstract

Caffeine is a natural or added component of products such as tea, coffee, cola, guarana, energy drinks and (in small quantities) in cocoa, etc. Drinking coffee based on epidemiological and experimental studies has shown various physiological effects such as relaxation of bronchial muscles, stimulation of the central nervous system through its antagonistic action of adenosine, secretion of gastric acid and diuresis, but in high doses caffeine consumption can be accompanied by the following symptoms: nervousness, anxiety, restlessness, insomnia, gastrointestinal discomfort, tremors, etc. The purpose of this paper was to obtain information about caffeine content in coffee using Lambert Beer's law and the integrated absorption coefficient technique. The determination of caffeine content was carried out using UV-VIS spectrophotometric methods. To determine the caffeine content in coffee, 6 dilutions were taken for analysis with different concentrations, where 0 ml, 0.1 ml, 0.2 ml, 0.3 ml, 0.4 ml, 0.5 ml of standard caffeine solution were added to 0.5 ml of the sample, where with the increase of sample concentration, absorbance is greater and transmission is less. In our case, the sample where the concentration is 0, the absorbance is 0.240, while in the concentration 0.6 the absorbance is 0.739. And in the end, by means of the formula in which the numerical values were calculated, we obtained the result that the caffeine content in coffee was 492 mg/L.

Keywords: Coffe, caffeine, concentration, absorbance, spectrophotometry UV-VIS.

GRAPES AS A RAW MATERIAL FOR WINE PRODUCTION AND DETERMINATION OF PHYSICAL-CHEMICAL AND ORGANOLEPTIC PARAMETERS IN WINE

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Abstract

The purpose of this study was to talk about the physico-chemical properties of grapes, about the anatomical impact and structure of grapes as well as the chemical and biochemical construction of grapes and wine, about during and after the fermentation phase, where in part second of the work in a more extended form we talked about water as the main ingredient of grapes, followed by sugars which are elementary and essential to start the fermentation process and to have successful alcohol production. In the part of working methods, we talked about the analysis that I made in the laboratory at "Sone Castle Vineyards and Winery", where for each analysis we stopped and talked about the progress and applied working methods. In the last part, we discussed the questionnaire made and the answers of 150 respondents to this questionnaire (questionnaire that has to do with wine consumption and some of their knowledge about wine regarding the importance of its consumption). From the questionnaire we have seen that the Albanian people in general, still do not have a tradition of consuming wine and this as a result of different dominant religions, but it is interesting because most of the respondents in the questionnaire said that they have knowledge regarding the aspect its external evaluators. Based on the responses of the respondents, we

realized that citizens have knowledge regarding the perception of wine products. A small number say that they use it for entertainment at various family parties, for the end of the year holidays and others. In general, the chain from production, processing to the consumer, goes through many links, which are necessarily to be met, so that we have a final wine with perfect taste and texture.

Keywords: Alcohols, sugars, flavonoids, consumers, production chain, wine color, its chemical nature.

COMPARISON OF SOME PHYSICOCHEMICAL PARAMETERS IN APPLE CULTIVARS, RED DELICIOUS AND GRAANY SMITH

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Abstract

Fruits have high nutritional values and play an important role in metabolic and vital processes in human life. They are distinguished by a high content of dry matter, carbohydrates (such as fructose in excess), glucose, sucrose and serve as a direct energy source, organic acids such as dominant malic acid, citric acid, and tartaric acid in some fruits. This study aimed to analyze the physicochemical analysis in the two cultivars of apple fruit (Red Delicious and Granny Smith). In the laboratory the following parameters were performed: pH scale, dry matter, humidity, content of vitamin C, and titratable acidity. The following values were obtained from the analysis: in the Granny Smith cultivar, are obtained a pH value of 3.34/16.4°C and for the Red Delicious apple cultivar, the result also came out in agreement with the allowed values (pH 4.06/ 16.4°C). The results obtained from titratable acidity are: for the Granny Smith Apple 0.726; while in the red delicious apple cultivar, 0.247. It is very important for the protection of the organism, as it affects the increase in the production of white cells and the appropriate level of interferon, the daily need for vitamin C in healthy people is 50-100 mg daily. From the analyzes made according to the regulation, we obtained the appropriate values needed to determine this analysis - specifically vitamin C in apples (Granny Smith 21mg/100ml and Red Delicious 9.34mg/100ml). Dry

matter and moisture content were in the allowed range where for Red Delicious 15.1% & 84.9% (moisture) and for Granny Smith 12.4% & 87.6% (moisture). After receiving the results, we have an accurate overview of the qualitative parameters of the apples.

Keywords: Red Delicious, Granny Smith, physicochemical analysis, apples, parameters.

ARSENIC: EXPOSURE THROUGH THE FOOD CHAIN, TOXICITY AND TOXICITY REDUCTION BY NUTRITIONAL COMPOUNDS

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Abstract

Arsenic is widely distributed in the environment, water, soil, and rocks. Arsenic enters in the food chain through food contaminated by arsenic pesticides, crops irrigated with arsenic-contaminated water, or grown in arsenic-rich soil. Among foods of plant origin, the highest concentrations of arsenic are found in rice, root and leafy vegetables. Arsenic can also be present in foods of animal origin, meat, fish, eggs, milk, and dairy products as a result of arsenic exposure in animals through feed and drinking water. Arsenic causes acute and chronic toxicity through disruption of mitochondrial function and oxidative stress. Chronic exposure to arsenic leads to multisystem disease, neurotoxicity, hepatotoxicity, nephrotoxicity, carcinogenicity, and genotoxicity. The health risk in case of chronic exposure to arsenic is estimated according to the calculation of: PTWI (Provisional Tolerable Weekly Intake), ER (Exposure rate), HQ (Hazard Quotient), and AELCR (Annual excess lifetime cancer risk). It is of great importance to reduce the intake of arsenic in the population by monitoring important monitoring points, continuous analysis of food and drinking water, early diagnosis and intervention. Foods with a high content of antioxidants and bioactive compounds can reduce the toxic effect of arsenic. The most powerful medicinal plants for treating arsenic toxicity are garlic, turmeric, milk thistle, some dietary fibers, algae, green and black tea.

Keywords: arsenic, food, health risk, antioxidants.

RISK ASSESSMENT OF SELECTED PESTICIDE RESIDUES IN APPLES

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Abstract

Fruit is an inevitable part of a balanced diet due to the presence of bioactive components, dietary fiber, vitamins and minerals. Apples, as a crop that is mostly grown in the Resen region, are consumed very often by the local residents but also more widely, because apples are exported from this region to other countries as well. During their cultivation, they are treated with pesticides for disease protection and good income. For that reason, the amount of pesticide residues, the quality and the safety of apples always attract a lot of attention in science, especially in the area of risk assessment and impact on health. For this purpose, an analysis of selected pesticides in apples was performed using the UPLC-TQ/MS method, previously extracted using the QuEChERS method. Risk assessments were performed using the established Acceptable Daily Intake (ADI) and the Estimated Daily Intake (EDI). After statistical processing of the data, the results show that in the thiametoxam EDI of adults is 3.3×10^{-5} - 6.6×10^{-5} mg x day⁻¹ and 1.3×10^{-4} - 2.6×10^{-4} mg x day⁻¹ for children, the acetamiprid EDI of adults is 1.6×10^{-5} - 3.0×10^{-5} mg x day⁻¹ and 6.6×10^{-5} - 1.3×10^{-4} mg x day⁻¹ for children, the imidacloprid EDI of adults is 1.645×10^{-2} - 3.29×10^{-2} mg x day⁻¹ and for children is 6.58×10^{-2} - 1.316×10^{-1} mg x day⁻¹. A preliminary long-term exposure assessment for the detected pesticides in apples showed that hazard quotient (HQ) was in the range of 0.064-219.33% of the ADI's. The results indicated that apple consumption with imidacloprid residue

represents a risk for health. We suggest a reasonable use of pesticides and respecting the pre-harvest interval (PHI) in order to better protect the health of consumers.

Keywords: pesticides, risk assessment, apples, nutrition, consumer health.

HEALTH-PROMOTING PROPERTIES OF PROBIOTICS IN FERMENTED FOODS

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Abstract

Consumers' interest in maintaining and improving health through food is increasing, which leads to the design of functional food that, in addition to basic nutrients, contains ingredients that are considered to promote health and reduce the risk of disease. Fermented foods and beverages play an important role in the human diet, and have a long history of safe use. The functional properties of fermented products are often attributed to the presence of probiotics, defined as “live microorganisms that when administered in adequate amounts confer a beneficial health effect on the host,” including therapeutic effects, metabolic effects and immunomodulation. Probiotics restore the natural intestinal microflora and inhibit the development of pathogenic bacteria. Fermented foods are ideal for delivering probiotics to the gastrointestinal tract and providing an optimal environment for their growth. Consuming fermented foods that contain sustainable microorganisms is an important strategy for improving the overall health and well-being of the body. The paper provides an overview of the characteristics and health effects of probiotics present in different fermented foods.

Keywords: functional foods, probiotics, fermented foods, health benefits.

NUTRITIONAL TREATMENT FOR OBESITY AND DIABETES TYPE 2

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Abstract

Obesity is a worldwide disease that affects everyone regardless of age. Obesity is one of the causes of many deaths because it is the cause of many other non-communicable diseases associated with it, especially diabetes type 2. This close relationship has led to the connotation "diabetes", emphasizing the fact that most people with diabetes type 2 are overweight or obese. BMI is used to classify obesity, but high level of BMI can be indicator of increase risque of diabet. Weight reduction can be achieved through a variety of weight loss strategies, including lifestyle intervention (diet and exercise), pharmacotherapy or bariatric surgery. Keeping weight and diabetes under control is problematic and variable for each patient. Keeping weight under control is both preventive and curative of diabetes, because with weight loss we can control the level of glycemia. This research is a review of the latest news on the way of eating for the prevention and treatment of obesity and diabetes, also the way of life is given special importance, as it is the key to various health conditions.

Keywords: obesity, diabet 2, nutrition, exercises.

THE EFFECT OF THE FUNCTIONALITY OF BUTTER ON COOKIES QUALITY: CORRELATION OF DIFFERENT FAT TYPES

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Abstract

Effects of some major fat types such as butter, margarine, sunflower oil on the physical and organoleptic characteristics of cookie have been studied. The sensory quality and overall acceptability of cookies were carried out on a 10-point scale. The sensory panel involved semi-trained panellists of Department of Food Technology and Nutrition. Functional and sensory properties of cookies prepared by supplementing same proportions of different fat types, wheat flour (WF) sugar were studied. Three formulations of cookies were prepared from (a) Control with sunflower, (b) with margarine and (c) with butter. The samples were rated on the basis of the criteria: 10 being highly acceptable and 0 being completely unacceptable with respect to different characteristics.

Significant effect ($P < 0.001$) of fat types on the shape of crust, taste and oiliness of the cookies were shown with the SPSS test of ANOVA. Moreover spearman correlation test ($P < 0.001$) showed positive relation between taste and sample number toward butter (0.48), and negative relation between oiliness and butter sample (-0.35) and crust color with cracking (-0.33).

It is important to understand the molecular basis of the different fat types and their effect to technological changes in cookies. In

conclusion the functionality of fat types had radical contribution in cookies affecting the quality to different extent.

Keywords: butter, functional properties, oiliness, fat crystallization, organoleptic properties.

THE AUTHENTICITY OF HONEY ACCORDING TO SOME MODERN TECHNIQUES - CHROMATOGRAPHIC & SPECTROSCOPIC TECHNIQUES

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Abstract

Honey is a complex natural food and undoubtedly a solitary sweetener that is used without any processing and has been consumed for centuries and is known for its numerous health benefits. However, the increasing demand for honey has led to the production of fake and adulterated honey products which could be harmful to consumer health and the honey industry's reputation. This study aims to investigate the qualities of good honey and the techniques for detecting honey authenticity.

To evaluate the qualities of good honey, the study used a combination of literature review, experimental analysis, and statistical modeling. It also investigated various spectroscopic and chromatographic techniques, including FT-NIR, Raman spectroscopy, NMR spectroscopy, infrared spectroscopy, gas chromatography (GC), and high-performance liquid chromatography (HPLC). The study explored the factors that affected honey quality, such as botanical & geographic origin.

The study's findings indicated and highlighted the importance of establishing honey authenticity standards and implementing quality control measures to prevent honey adulteration.

In conclusion, the studies provided valuable insights into the qualities of good honey, how to distinguish natural honey from fake honey

techniques that serve for use in the categorization and discovery of honey, as well as incorporated authenticity.

The findings could help improve the quality and safety of honey products, protect consumer health, and support the sustainability of the honey industry.

Keywords: honey, modern techniques, adulteration, authenticity.

CONTROL OF SAFETY PARAMETERS IN FRESH COW'S MILK

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Abstract

During this study, Aflatoxin M1 and somatic cells were analyzed in fresh milk from different farmers in the region of Tetova. The method used for the detection of Aflatoxin M1 was EN ISO 13366/2 Fluorometer and method for somatic cells NucleoCounter SCC-400. A total of 10 samples were analyzed in different months during the year 2022, which will be reflected in the tables in the results and discussion. The samples were analyzed at the Food Products Control Laboratory, Faculty of Food Technology and Nutrition, University of Tetova. The results of this paper show the presence of Aflatoxin M1 in fresh milk, the highest level of this aflatoxin was found from February to May, while in other months the same level of Aflatoxin M1 was found in fresh milk from different farmers. in the region of Tetova. At the same time were also analyzed the somatic cells in fresh milk. It should be noted that the number of somatic cells was higher from February to May. The samples meet the requirements of the Regulation on general requirements for food safety regarding the minimization of the level of some pollutants "Official Gazette" of the Republic of Macedonia 175/2018. The maximum allowed level is 0.050 µg/kg. Also, the samples analyzed for somatic cells fulfill the requirements of the Regulation for the general requirements for the

number of somatic cells. The maximum allowed level is 400,000 cells/ml.

Keywords: Aflatoxin M1; Somatic cells, Region of Tetova; Fresh milk; EN ISO 13366/2.

BARLEY AS A RAW MATERIAL FOR BEER PRODUCTION AND ITS PROCESSING TECHNOLOGY

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Abstract

The purpose of this study was to understand how much consumers are informed about the importance of the beer technology process starting from the raw material to the product on the market to what extent beers are consumed in general, do they qualify beer as a key factor of their day if yes then how often they consume it, when and where. We have tried to summarize some data regarding the interest, consumption, factors that The Covid-19 pandemic, which we left behind for two years, brought many fluctuations in the country's economy, including the public and private sectors, which was also reflected in the beer where it needed to be given importance. Greater and greater care regarding the hygienic side of either laboratory equipment or even those of production to employees. In the first part are given data on gender, age, citizenship and consumer preference for beer and so on. Although in this study are included different countries, the main starting point was Kosovo because it is represented in the highest percentage, based on this I managed to see that (73.9%), like beer consumption (26.7%), said who spend for it, its purchase between the amount (30-40 €), and that (89.9%), are willing to pay a much higher but always symbolic amount to offer a better quality and safer beer e which includes all the parameters and tests necessary for an adequate and quality beer for consumption.

Keywords: Customers, technological process, sales system operation, factories, production, analysis, cost.

THE INFLUENCE OF OLEOGELS ON THE NUTRITIONAL VALUE, OXIDATIVE STABILITY, RHEOLOGICAL - SENSORY CHARACTERISTICS OF DIFFERENT TYPES OF SAUSAGES

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Abstract

Sausages are the oldest form of meat preservation known through historical evidence. Over time, sausages were gradually reshaped by adding other ingredients despite salt. Depending on the type, sausages contain up to 30% of fat, which directly affects the sensory and technological characteristics of sausages. In recent decades, with the development of oleogels, more research has been done on characteristics and the possibility of their application in food. In this review, the possibilities for the application of oleogels in different types of sausages and their influence on the nutritional value, oxidative stability, and rheological-sensory characteristics will be considered.

Keywords: sausages, oleogels, nutritional value, oxidative stability, rheological-sensory characteristic.

EFFECT OF HERBS SUPPLEMENTATION ON EGG YOLK QUALITY

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Abstract

Egg yolk as part of egg is an excellent source of vitamins A, B, D, E, K, folate, choline, lecithin, minerals (phosphorus, zinc, iron, selenium, iodine) and antioxidants, zeaxanthin and lutein carotinoides, important for reduction of age related macular degeneration. The cholesterol was suspected in promoting hypercholesterolemia, but according contemporary nutritionists has no negative effect. The purpose of this experiment was to summarize our studies of herb supplementation in layer diet on egg yolk quality. The diet of experimental hens was supplemented with 0.5% dried and milled fruits of rosehip (group 1), 0.5% dried nettle (*Urtica dioica* L.) (group 2) and 0.5% dried marigold (*Tagetes vulgaris*) (group 3). All experimental groups had significantly higher egg yolk pigmentation ($p < 0.001$) compared with the control group. A significantly lower egg yolk cholesterol content was found in hens from experimental group 2 and group 3 ($p < 0.01$). In our experiment, the rosehip supplementation significantly influences reduction of the lipid peroxidation in egg yolk ($p < 0.01$).

Keywords: herbs, egg yolk, pigmentation, cholesterol, lipid peroxidation.

QUALITY PROPERTIES OF SOLAR DRIED GOJI BERRIES (LYCIUM BARBARUM)

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Abstract

Goji berries (*Lycium barbarum*), is a bushy tree belonging to Solanaceae family. It is also known as wolfberries, or Chinese boxthorn. Its fruits are 1-2 cm long, bright orange-red ellipsoid berries. The goji berries can be consumed as both fresh and dried berries. As dried, berries can be used throughout the whole year.

The aim of this research was to determine the quality properties of fresh and dried goji berries. The goji berries, variety JB2 were dried in a solar dryer. Before the drying, the berries were pretreated by different methods, with the purpose of determining the best way to preserve the quality characteristics after drying. The methods of pretreatment were following: berries without pretreatment (control); immersing the berries in boiling water, cooling and immersing them in a 1 % ascorbic acid solution for 5 minutes; immersion of frozen berries in a 1 % ascorbic acid solution for 5 minutes.

To determine the quality properties of fresh and dried goji berries, the following chemical analyzes were performed: total dry matter, water, total acids, ash, total sugars, vitamin C, cellulose, proteins, total oils and total polyphenols. The sensory properties were estimated by using the scoring method (max. 20).

It was estimated that goji berries, variety JB2, have good quality properties, in terms of their nutritional composition and sensorial characteristics. The application of solar drying has shown good results, both from an economic and ecological point of view, as well as in terms of preserving the chemical components of the goji berries.

Keywords: goji berries, solar dryer, pretreatment, quality properties.

THE ROLE OF SPICES IN THE HUMAN DIET

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Abstract

Proper diet is one of the basic factors determining the proper functioning of the human body, which plays a special role in the prevention of chronic diseases of civilization, i.e. obesity, ischemic heart disease or diabetes. In order to reduce diet-related diseases, literature data indicate the use of a diet characterized by the consumption of a large amount of vegetables, fruits, and grain products. Spices are also an important part of the diet. Spices are parts of plants, of which the most common are: roots (Radix), rhizomes (Rhizoma), shoots (Turio), bark (Cortex), leaves (Folium), buds (Gemmae), flowers (Flos), seeds (Semen), fruits (Fructus). They are used fresh or processed as spices: dried, frozen or freeze-dried. Spices have been known for centuries. They were used primarily for culinary purposes. Due to their specific aroma and flavor, spices are used as food additives, among other things, to obtain specific flavor and aroma properties of products and dishes; to give them new tastes; to prolong the shelf life of products by inhibiting both the growth of microorganisms and oxidative processes. Knowledge of their appropriate use in disease states is of great importance for the proper functioning of the human body. The purpose of this study was to present selected spices (including turmeric, garlic, pepper, cumin, ginger) in human nutrition.

Keywords: species, human diet, health.

CATERING DIET - IS IT RELIABLE?

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Abstract

Over the past few years, people have become increasingly busy. It has become difficult for overworked individuals to prepare five meals a day, leading them to turn to catering companies that deliver ready-made meals straight to their home or workplace. These meals are often delivered in a box, and they are confident in their choice as the company promises delicious and nutritious meals that are expertly crafted by professionals. Additionally, customers who order from these dietary catering companies expect their meals to be healthy and balanced. For this study, we evaluated the dietary menus of a single catering company, selected randomly, located in the Lower Silesia Province. The menus were evaluated for ten days using the Diet 6D program developed by the Institute of Food and Nutrition in Warsaw. The nutrient content and energy value of each of the ten menus were calculated. The results showed that the catering company's menus were not composed correctly. The proportion of nutrients did not match the recommendations for a balanced diet. The company offered too high a percentage of protein, vitamin A and magnesium and too low a percentage of iron and calcium. The meal's energy value, salt and sucrose content were in line with the standards. Each day customers were offered a variety of meals rich in fruits and vegetables. It is essential to note that the catering company's meals were advertised as "healthy" on its website. However, the meals were not adequately balanced or prepared according to the rules and standards of food preparation. This study emphasizes the need to raise consumer awareness regarding catering services. While some dietary catering services may meet customer expectations, this study shows that this is not always the case.

Keywords: catering diet, human diet, health, nutrition.

**1st International Conference on Sustainable
Agriculture Farming System**

DEVELOPMENT OF AGRICULTURE AS AN ECONOMIC ACTIVITY IN THE REGIONS OF NORTH MACEDONIA

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Abstract

The development of agriculture differs markedly from other sectors of the economy. While in the market economy the fate of businesses in each sector is preordained by the market competition by offering the best solution, for agriculture in general there are some exceptions that come as a result of state support with subsidies. The main rationale behind the direct state support of this sector is that the food of people is a necessity without which we cannot live. Agriculture is a broad economic activity, which deals with the tilling of land, the cultivation of plants, breeding of animals and their exploitation for human needs. Agriculture is more associated with natural conditions, but social conditions that also play an important role in its development should not be overlooked. The natural factors to be analyzed are: relief, climate, waters, soil, plants and animal world (flora and fauna), geological-petrographic composition of the soil, etc., and the social factors to be taken into account are: melioration, mechanization, chemicals, selection of seeds for planting, selection of animals, opening of vocational schools, etc.

In North Macedonia we have 6 agricultural regions and they are: Golemozerski Region, Western Region, Skopje and Kumanovo Region, Eastern Region, Mediterranean Region and Pelagonia Region.

The Republic of North Macedonia as a developing country is ahead of a transition to transforming agriculture from a semi-open sector in international trade and with support from within and outside, into a more open and liberal sector. To see how far North Macedonia has progressed in these processes and perspective, the purpose of this paper is to make a critical assessment of them and to draw conclusions on what would be the best alternative for the development of agriculture.

Keywords: Agriculture, regions, agriculture crops, soils, meadows, perspectives.

MONITORING THE BIOLOGY OF THE CORN ROOTWORM (DIABROTICA VIRGIFERA), FOR THE REGION OF KORÇA

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Abstract

In recent years, the Korça region has planted an average of 6700 - 7000 ha of corn for grain. The most widespread cultivars for planting are mainly medium cycle, while long cycle is mainly planted Pioneer 630 Fao variety. During 2021, the corn rootworm *Diabrotica virgifera virgifera* LeConte, appeared sporadically. In 2022, this pest affected about 4000 ha of corn, mainly in the flat area, and the highest rate of infection appeared in the Maliqi field. The pest was not present in the Korça region.

Climate change, where mild winters leave the place to hot summers, favors the emergence of many pathogens and pests that were not previously present in this region. This pest has been detected and monitored in the flat area of our country since 1999 using the sex pheromone 8-methyl-decane-2- oylpropanate. Until now, there is no real study of *Diabrotica virgifera* for the Korça region. The insect mainly damages the root system of the corn, but also the female flower of the corn and the leaves, causing significant damage to the production. This is the first monitoring of *Diabrotica virgifera*, in the district of Korça.

Keywords: *Diabrotica virgifera*, corn, the female flower, monitoring, cultivar, damage.

PROTECTION OF APPLE FROM CODLING MOTH (CYDIA POMONELLA), USING THE MATING DISRUPTING PHEROMONES ISOMATE CTT

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Abstract

In the Korca region, Albania (*C.pomonella*) is a key pest in apple production. Insect develops two complete generations per season. To protect the apple from codling moths, an average of three treatments with conventional insecticides per season are carried out.

In 2022, the mating disruption method of *C. pomonella* ,was used for the first time using the Isomate CTT product with the active ingredient (E,E)-8,10-dodecadien-1-ol (codlemone) The field tests were carried out in four apples blocks in Korca, area with a total 2.66 ha. 500 dispensaries/ha .Calculation of dispensaries is based on the fact that one dispensary thread protects 20 m² of orchards. The dispensers were hung at the time, when in the monitoring pheromones traps, caught the first *C. pomonella* adult.

An isolation distance of 200 m was respected between the blocks treated and not treated with Isomate CTT. Only one treatment was carried out for the whole season. The results were such that Isomate CTT kept the infection at the limit of the tolerated economic damage; 3 infected fruits in 1000 analyzed fruits.

The cost with Isomate CTT was 29% more expensive than with conventional insecticides. . Treatment of larger surfaces, the cost drops, because many more Isomate CTT dispensers will be purchased, Product Isomate CTT, is registered for apple organic production ,because it has no negative impact on the environment.

Keywords: *Cydia pomonella*, apple production, Isomate CTT.

SUSTAINABLE PRODUCTION OF ORIENTAL TOBACCO IN THE REPUBLIC OF NORTH MACEDONIA

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Abstract

Sustainable tobacco production is defined as efficient production of high quality tobacco raw material, under conditions that limit the negative impact on the environment, in a way that improves the socioeconomic status of people and communities in the tobacco production areas.

The aim of this paper is to investigate the sustainability of oriental tobacco production in the Republic of North Macedonia, where the best fine-leaf aromatic oriental tobaccos are traditionally grown. Poor soils and a dry climate are most suitable for its cultivation. In addition, there are a number of advantages from a social and economic point of view. Compared to the other types of tobacco production, it has significantly less harmful impact on the environment, uses less water for irrigation, less synthetic fertilizers and pesticides and less fossil fuel. Oriental tobacco production also occupies significantly smaller areas. Sun cured tobacco types do not require any fossil fuels for curing compared to the flue cured tobacco types grown worldwide. Scientific Tobacco Institute - Prilep is engaged in creating sustainable production strategies for soil and water conservation, adopting precision agriculture measures and low input strategies in order to help farmers cope with the global crisis and climate change. Its research activity is also focused on improvement of the existing and

creation of new, sustainable and drought resistant varieties. In this paper we will focus on the economic viability of oriental tobacco production and the adoption of new methods to achieve good agricultural practices and better environmental management.

Keywords: Sustainable tobacco production, oriental, strategies, environment, agriculture.

ECONOMICALLY IMPORTANT PEST (TORTRICIDAE AND GELECHIIDAE: LEPIDOPTERA) ON STONE FRUIT IN NORTH MACEDONIA

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Abstract

Grapholita molesta Busck, *Grapholita funebrana* Treitschke (fam. Tortricidae, Lepidoptera) and *Anarsia lineatella* Zeller (fam. Gelechiidae, Lepidoptera) are economically significant pests on the stone fruit in North Macedonia. During 2022 in order to identify the most critical period of their appearance, monitoring of these pests has been established in six different locations in the country in orchards with mixed stone fruits. The results give new insights of the flight period and biological development of these pests in the specific climatic and geographical conditions. *G. molesta* in Sirkovo had total flight period of 258 days (2.3.- 14.11.2022), 258 days (24.2.- 8.11.2022) in Debrishte, 201 days (20.3.-7.10.2022) in Chelopek, 202 days (12.4.-6.11.2022) in Zhelino, 261 days (13.4.-29.12.2022) in Hamzali-peach and 238 days (1.4.-24.11.2022) in Hamzali-plum. *G. funebrana* in Sirkovo had total flight period of 229 days (31.3.- 14.11.2022), 264 days (8.3.-26.11.2022) in Debrishte, 209 days (20.3.- 15.10.2022) in Chelopek, 212 days (26.3.-23.10.2022) in

Zhelino, 233 days (6.4.-24.11.2022) in Hamzali-peach and 240 days (30.3.-24.11.22) in Hamzali-plum. *A. lineatella* in Sirkovo had total flight period of 215 days (27.4.-27.11.2022), 216 days (25.4.-26.11.2022) in Debrishte, 202 days (18.4.-5.11.2022) in Chelopek, 202 days (12.4.-6.11.2022) in Zhelino, 240 days (30.3.-24.11.2022) in Hamzali-peach and 218 days (13.5.-16.12.2022) in Hamzali-plum. Concerning the locations there are statistically significant differences for *G. molesta* and *A. lineatella* ($p < .01$) but no statistically significant differences for *G. funebrana*. Continuous monitoring of the pests will help in establishing Integral Pest Management in stone fruit orchards in order to improve food safety standards and to keep the environment from insecticide pollution.

Keywords: Gelechiidae, Tortricidae, Lepidoptera, stone fruits, Integral Pest Management.

DETERMINATION OF PLANT HEIGHT AND NUMBER OF TUBERS PER PLANT OF SOME POTATO CULTIVARS IN THE POLOG REGION

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Abstract

The purpose of the experiment was to investigate the impact of different herbicides on the height of the potato plant as well as on the number of tubers per plant. In field conditions, five potato cultivars were investigated: Dezire, Kondor, Ultra, Karlita and Arnova, as well as six different variants of herbicides: absolute control, mechanical control, pendimethalin, linuron, metribuzin PRE, and metribuzin POST. The experimental scheme was a randomized block with three replications for each variant with experimental plot sizes of 21 m². The experiment was carried out in the vegetative year 2020 in the locality of Sellarcë e Epërme, Tetovo.

Based on the obtained results, the following was established: Cultivar Dzire reached the highest height in the H4 variant, also 59.4 cm, while the lowest height in the H1 variant was 57.8 cm, Kondor in the H2 variant was also 66.2 cm while lower in the H4 variant 62.0 cm, Ultra in the H3 variant also 79.4 cm while lower in the H1 variant 73.3 cm, Karlita in the H2 variant 54.2 cm while lower in the H3 variant 62.6 cm, Arnova in the H3 variant 62.1 cm while the lowest in the H1 variant 56.4 cm or on average all types of potatoes reached the highest

height in the H3 variant 65.5 cm while the smallest in the H1 variant was also 62,4 cm.

As for the number of tubers per plant of the obtained results, the following was found: Cultivar Dezire, the highest number of tubers was reached in the H3 variant (10.3), while the smallest number was in the H2 variant (9.0). , Condor the highest number of tubers reached the H4 variant (10.0) while the smallest number reached the H3 variant (8.7), Ultra the highest number of tubers reached the H2 variant (8.7), while the smallest number in the H3 variant (7.0), Karlita, the largest number of tubers reached the H2 and H4 variants (10.0), while the smallest number in the H3 variant (9.0), Arnova number the largest number of tubers has reached the H2 variant (10.7) while the smallest number has reached the H4 variant (9.0) or on average all types of potatoes the largest number of tubers has reached the H2 variant (9.5) while a smaller number in the H3 variant (9.1).

Keywords: potato, cultivar, variant, significance.

CORRELATION BETWEEN PLANT VARIETY AND NUMBER OF TUBERS PER PLANT SOME POTATO CULTIVARS

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Abstract

The purpose of the experiment was to investigate the impact of different herbicides on the height of the potato plant as well as on the number of tubers per plant. In field conditions, five potato cultivars were studied: Dezire, Kondor, Ultra, Karlita and Arnova, as well as six different variants of herbicides: absolute control, mechanical control, pendimethalin, linuron, metribuzin PRE and metribuzin POST. The experimental scheme was a randomized block with three replications for each variant with experimental plot sizes of 21 m². The experiment was carried out in the locality of Sellarcë e Eperme Tetovo. Based on the obtained results, the following conclusions were established: The cultivar Dezire reached the highest height in the H1 variant and 54.2 cm, while the lowest height in the H4 variant was 43.4 cm, the Kondor cultivar in the H1 variant and 48.3 cm, while the lowest in the H4 variant also 42.1 cm, the Ultra cultivar in the H2 variant also 69.2 cm while lower in the H3 variant also 66.8 cm, the Karlita cultivar in the H2 variant 49.7 cm while lower in the H4 variant also 42.7 cm, the cultivar Arnova in the H1 variant 60.1 cm while the lowest in the H4 variant 46.8 cm or on average all types of potatoes reached the highest height in the H1 variant 55.7 cm while the smallest in the H4 variant and the 46.8 cm one.

According to the results obtained for potato height, it can be noticed that only in the Arnova cultivar there is significance in the H1, H2 and H5 variants at the 0.05 level and in the H4 variant at the 0.01 level. Meanwhile, regarding the average of all cultivars, we have no significance at both levels in all variants.

Keywords: variant, efficiency, phytotoxicity, cultivar.

EVALUATION OF THE EFFECTIVENESS OF DIFFERENT HERBICIDES IN COMBATING WEEDS IN BEAN (*PHASEOLUS VULGARIS*.L.) AND THEIR INFLUENCE ON YIELD

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Abstract

Even beans as an agricultural crop, among others, are in competition with different types of weeds. To find a solution for the reduction of weeds in the bean culture, in the locality Sellarcë e Eperme-Tetovo, in the Polog region, a field experiment was set up as a randomized block design with three repetitions and the size of the plot was 21 m². In the experiment, the number of weeds per m², the structure of weeds, the rate of appearance, the efficiency of herbicides, the impact on yield, and the phytotoxicity of herbicides on the bean plant have been studied.

The following treatments were included in the experiment: pendimethalin 5.0 l/ha, linuron 2.5 l/ha dimethenamid-p+pendimethalin 3.5 l/ha, metobromuron 3.0 l/ha, dimethenamid+terbuthylazine 4.0 l /ha, metobromuron 4.0 l/ha, pendimethalin+linuron 5.0+2.5 l/ha, absolute controls, and mechanical controls. The results showed that the structure of the barrows consists of 8 types of barrows, of which one type is from the group of monocotyledonous barrows and seven types from the group of dicotyledonous barrows. The number of barrows was 627.7 plants/m². The dominant weeds were: *Solanum nigrum* with 550.7

plants/m² or 87.7%, *Echinochloa crus-galli* with 37.3 plants/m² or 5.9%, and *Amaranthus retroflexus* with 22.3 plants/m² or 3.5 %.

The efficiency of herbicides in the fight against dicotyledon weeds was 83.3-96.4%, monocotyledon weeds 60.6-92.5%, and the overall efficiency was 83.0-96.2%. Regarding the phytotoxicity in the bean culture, no signs of phytotoxicity were observed from any of the herbicides used.

Keywords: dominant, monocotyledons, efficiency, phytotoxicity.

AGROECOSYSTEMS' CLIMATE CHANGE ADAPTATION FOR SUSTAINABILITY

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Abstract

Changes in agro climatic indicators present a challenge to maintain the sustainability of agroecosystems. Evidence of the change in climate factors is of great importance to reflect on long-term and environmentally compatible solutions. The study is focused on a multi-year analysis of the main climate indicators, such as temperature and precipitation. Climatic data collected in the district of Korça, Albania, were processed and compared with the relevant data indicators of the previous 30-year periods. The solution to climate change is based on the use of a very high level of biodiversity and changes in the technology of agricultural crops. The correct answers have emerged on the basis of experimental studies for different agricultural crops. Conducting these studies aims to change climate change from a problem to an opportunity for increasing the productivity of agricultural crops and sustainable agricultural development in harmony with the environment.

Keywords: agroecosystems, biodiversity, climatic factors, sustainable development.

THE STUDY OF MORPHOLOGICAL AND PRODUCTION INDICATORS OF SAFFLOWER CULTIVARS (*CARTAMUS TINCTORIUS L*) IN ALBANIA

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Abstract

Safflower is an annual oil plant of the Umbrellifere or Asteraceae family. It is widespread in the wild in some countries of the world. It is treated as a weed. For several years, it has been treated as a food coloring plant, for various textiles, and as a dyestuff agent for human hair. Meanwhile, it is also used for the production of lipstick for women. Later, the values for the oil content found in its fruit were determined. Precisely for this, studies have been done on various genetic, technological, agricultural, and industrial aspects. For several years, the study of some cultivars of safflower was carried out in Albania. The study was carried out in the district of Lushnja, initially in collaboration with the University of Viterbo, Italy, and later, the work continued for several years, independently in Albania. Eleven cultivars originating from Italy, France, Spain, and the USA were included in the study. The study was carried out according to the methodology designed and approved by both Universities, making biometric measurements of morphological and productive indicators: plant height, number of branches on the plant, number of pods (captins) per plant, number of fruits (achen) per pod and plant, the weight of 1000 fruits (g), production per plant (g) and yield (kv/ha).

Keywords: Safflower, branch, cultivar, pod, fruit, achen, dyestuff, oil.

EVALUATION OF MORPHOBIOLOGICAL AND PRODUCTIVE INDICATORS OF POTATO CULTIVARS (SOLANUM TUBEROSUM L)

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Abstract

The potato (*Solanum tuberosum* L.) is an annual plant of the Solanaceae family spread all over the world. This is due to the adaptability of the plant, the variability of potato cultivars in terms of plant period, biological and technological adaptability. It is cultivated at all altitudes above sea level, from the coastal area as an early potato to the high areas as a late potato. The genetic study, the creation of new cultivars with higher biological productive capacity, with higher resistance to viral, bacterial, and fungal diseases has constantly been the object of the research and scientific work of the Research Institutes for the potato all over the world and especially in Netherlands and which has not only the highest yield in the world, but produces the elite potato seed. The creation of new cultivars is constantly in scientific work and in seed production. Ecological and productive degeneration in potatoes is a frequent occurrence, significantly reducing potato yield. Therefore, the creation of new cultivars and their testing in different countries is coherent. Eleven potato cultivars obtained from the Netherlands, France and Germany were included in the study, specifically: Jaerla, Agria, Mandola, Bjodina, Universi, Malou, Loane, Melene, Amany, Big Rose, and Flower Blu.

In these cultivars, biometric measurements were made for plant height, number of shoots per plant, production per plant, vegetative period, average tuber weight, and yield (kV).

Keywords: Potato, genetic, tuber, cultivar, yield, sprout.

**THE STUDY OF THE CHEMICAL
COMPOSITION AND CONTENT OF FATTY
ACIDS IN SAFFLOWER CULTIVARS
(*CARTHAMUS TINCTORIUS* L.) IN REGION OF
LUSHNJA, ALBANIA**

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Abstract

Safflower (*Carthamus tinctorius* L.) is a relatively new plant in world agriculture. It has been studied and cultivated in a few countries of the world: India, China, USA, Argentina, Kazakhstan and Mexico. In Australia it was first recognized as a weed, while in European countries it was cultivated in Spain. In Albania, there is safflower “Leshatak” (*Cartamus Lanatus* L) according to Prof. Mustafa Demiri, who has described it: “One-year plant that grows in dry places, mainly in the area of the maquis and the oak”. In the 18th century, Egyptian safflower dye was used in Italy, France, and Britain to color cheese and flavor sausage. In some countries it is also used as a plant with medicinal value against rheumatism, thrombosis, cholesterol, male and female sterility. It has been used very effectively against diabetes, reducing it significantly after six weeks of use. Also in the fight against scabies in small animals (sheep). Today, about one million hectares are cultivated with a production of over one thousand tons. In Europe, the largest producer is Spain and the oil has the highest price, being used mainly for salad, influencing the melting of fats in obese people. The study of the chemical composition and fatty acids in the fruits and in the safflower oil has been a special object of this

scientific work. The following were studied: fats, proteins, fibers, as well as moisture and the content of fatty acids: palmitic, stearic, oleic, linoleic, and linoleic acid.

Keywords: safflower, oil, acids, protein, albumin, sterility, weed.

SOME ASPECTS OF SUSTAINABLE RURAL DEVELOPMENT IN THE MUNICIPALITY OF TETOVA

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Abstract

The municipality of Tetova is located in the northwest of the Republic of North Macedonia. It consists of 20 settlements, 1 urban settlement that constitutes the city of Tetova as the municipality's capital, 19 rural settlements of which 6 are hilly rural settlements and 4 mountainous rural settlements, where the trends of rural exodus and deagrarianization are on the rise in recent years. Considering this fact, sustainable rural development in this municipality is very important for the quality of life of the rural population, and the agricultural and economic development of the municipality. In this paper, several interrelated methods are used: analysis and synthesis methods, evaluation methods, information methods, cartographic methods, and field research methods.

Aspects of rural development include natural potentials such as geological construction, relief, climate, water resources, biodiversity, and anthropogenic potentials which include: demography, agricultural production, traditional crafts and businesses, tourism, infrastructure, and other social services.

Keywords: Tetova municipality, sustainable rural development, natural potentials, anthropogenic and economic potentials.

YIELD, GROWING DEGREE DAYS, PHENO THERMAL INDEX AND HEAT USE EFFICIENCY OF WHEAT (TRITICUM AESTIVUM) AS INFLUENCED BY SOWING DATES

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Abstract

The aim of the study was to predict: 1. the different stages of wheat development, depending on planting time and the GDD accumulated. 2. To calculate the pheno-thermal index (PTI) for different stages of development 3. To calculate the heat use efficiency (HUE) for grain yield. A trial was set up using a randomized complete block with three replications in the Botanical Garden of Agricultural University of Tirana. Three sowing dates (Nov.11, Nov. 26, Dec 11) and one wheat cultivar (Dajti), were tested. The results showed the plant cycle and GDD required from planting to ripening is reduced in late sowing dates.

The values of PTI in early stages of development, from germination till tillering, decreased, while from the tillering till flowering, these values increased for all three planting dates. The highest heat use efficiency for grain yield (2.82 kg/ha/0C day) was recorded under normal sowing i.e. 11th November sown crop. Subsequent delay in sowing resulted in decrease in HUE. November 26 and December 11 sowing time had values of 2.49 and 1.89 kg/ha/0C day, respectively. The yield was significantly affected by planting dates. The maximum grain yield (6430 kg/ ha) was recorded when planting was done on November 11th, which decreased gradually and significantly to 4130

kg/ ha when planting was done on Dec.11. The yield attributes studied in this experiment showed smaller decrease i.e. 22.4 % in grains/spike and 8.0% in 1000-grain weight as compared with the 35.8% decrease in the grain yield when sowing was delayed till Dec.11th as compared with Nov.11th.

Keywords: Growth degree day, Heat use efficiency, Pheno-thermal index, Sowing date, Yield.

STUDY ON METHODS FOR EXTRACTING PROPOLIS COLLECTED IN MOUNTAIN APIARIES

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Abstract

Propolis (bee glue), a resinous substance that bees harvest from plants, has been used as a popular medicine for hundreds of years and is currently used in natural foods and a variety of pharmaceuticals and cosmetics. In the period February - April 2023, suitable extracts were obtained from raw propolis of two different botanical origins collected in mountain apiaries in eastern Macedonia. Physical parameters: yields, dry matter, pH, conductivity have been analyzed in propolis extracts. Two subsequent extractions (by three replicates) were made on the same samples in order to obtain initial knowledge on the achievement of the highest yield of a certain amount of propolis. The results lead us to the conclusion that the two-stage extraction with a fresh solvent provides more total extracted dry matter. Further testing should be performed to analyze the utilization and optimization of unsolved propolis solids.

Keywords: Propolis extracts, two-stage extraction, physical parameters.

POSSIBLE WAYS AND APPROACHES FOR SUSTAINABLE AGRICULTURE WITH SPECIAL REFERENCE TO TOBACCO PRODUCTION

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Abstract

The sustainable development of agriculture cannot be imagined without its economic ability, environmental protection, social responsibility and ethical focus. Economically powerful agriculture implies the application of new economic methods, which also ensures environmental protection.

Ecologically protected agriculture prefers rational use of natural resources, application of optimal amounts of fertilizers and agrochemical products and special care for the environment. Social responsibility is aimed at hiring agricultural workers, their motivation and commitment to ecologically clean agricultural production.

Eco - ethics is a principle focused on many areas, including how to cultivate the soil, grow crops, treat animals and care for the environment. Tobacco production is an agricultural activity in which about 12% of the population in the Republic of North Macedonia is engaged. Its development must correspond to the guidelines and intentions of the European Union and the global world policy defined by various governmental and non-governmental organizations, which in practice means the production of high-quality tobacco, its application for bioenergy and continuous concern for environmental protection.

This paper determines the trends of the sustainable development of agricultural production, with special reference to the dynamics in the development of tobacco production.

Keywords: agricultural system, environment, eco - management, tobacco, strategy.

A BRIEF OVERVIEW ON CONSERVATION AND SUSTAINABLE USE OF ALBANIAN ANIMAL GENETIC RESOURCES FOR FOOD AND AGRICULTURE

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Abstract

Animal Genetic Resources for Food and Agriculture are one of the great national assets of Albania. This genetic fund comprises about 35-40% of biodiversity. The sustainable and effective preservation and use of this wealth is a task that requires the permanent commitment of society in general, government, local government, and the farming community, in particular. In fulfilling this task, the Albanian legislative body has drawn up a legal framework aligned with the requirements and standards of international and FAO documents. The Government and the Ministry of Agriculture have made efforts, but not always with the same commitment and in continuity, to fulfill the obligations arising from the ratification of the Biodiversity Convention, Nagoya Protocol, Interlaken Declaration, etc. In accordance with these documents, the Albanian Government has compiled a National Strategy and National Action Plan for the conservation and sustainable use of animal genetic resources. The implementation of these strategic documents is a critical process. Currently, there are no active institutions, bodies, and operational units for their implementation. There is a lack of support with public funds for the implementation of programs for in-situ and ex-situ.

The Albanian autochthonous genetic fund consists of native, traditional, and local breeds of dairy cattle, buffalo, poultries and

goats, pigs, poultry, ungulates, and dogs. In most of them, these breeds are considered to be in danger of disappearing. Among the main factors causing this situation, economic factors, emigration of the population to urban areas and abroad, and their displacement and/or crossing with animals of improved, exotic breeds can be singled out. Facing the challenges generated by the actions of these factors makes it necessary to implement urgent programs and projects, the success of which is conditioned not by the support for their implementation but by the sustainable economic effect that can be achieved through their implementation. This fact is evidenced by the project for the in-situ conservation of native pig breeds, as a success story, and the program for the conservation of buffaloes as a story where success is missing.

Keywords: Animal Genetic Resources, Conservation, Use, Albania.

EXPRESSION OF THE MAIN AMPELOGRAPHIC CHARACTERISTICS OF SEVEN AUTOCHTHONOUS GRAPEVINE CULTIVARS GROWN IN DIFFERENT REGIONS OF ALBANIA

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Abstract

Albania is a well-known country of origin of the several autochthonous or indigenous grapevine ecotypes and cultivars, and the wild grapevine. The aim of the study was the ampelographic characterization of seven autochthonous cultivars selected and cultivated in centuries in different locations of the central and north-eastern Albania. The study was conducted during a 17-years period of time (2005-2022), but the study of each cultivar on each location was conducted during three consecutive years in order to reach the right conclusions. The representative sample of each cultivar was composed of 10 vines, labeled and marked throughout the study period, on 10 leaves for the mature leaf characteristics, and so on. Observed results showed that some characteristics seems to be similarly expressed, while some others were differently expressed. Similarities were shown for the openness of tip of the young shoot (OIV-001), shoot attitude (before tying) (OIV-006), the number of lobes of the mature leaf (OIV-068), must yield (ml juice/100 g berries) (OIV-233), total acidity (tartaric acid) of must (g/L) (OIV-506), time of budburst (OIV-301), and time of full bloom (OIV-302), while the other characteristics were evaluated differently. These cultivars and ecotypes continue to dominate the varietal structure of

Albania's vineyards and pergolas and serve as a very important factor in the development of viticulture and winemaking, as well as in the development of rural tourism, the basis for very high quality wines for the local market and foreign tourists, who seek for specific Albanian products.

Keywords: Albania, ampelographic, characteristics, descriptor, evaluation, phenology.

DETECTION OF LEISHMANIASIS DISEASE IN STRAY DOGS IN THE TETOVO REGION AND BREEDS WITH HIGHER SUSCEPTIBILITY

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Abstract

Leishmaniasis is a deadly disease, in addition to dogs with owners, recently it has also been detected in stray dogs in the region of Tetovo in different breeds. It is mosquitoes of the genus *Phlebotomus* that transmit the disease to dogs and humans. This *Phlebotomus* is active from March to October. Mainly stray dogs are not protected from these insects by not being treated by these ectoparasites, not wearing anti-parasite belts, not being treated by ectoparasites, to keep these parasites away. In the last 5 years in the Republic of North Macedonia, tests and treatments are being carried out for the detection of leishmaniasis and the treatment of stray dogs. Leishmaniasis is detected more in pure pedigree breeds and less in mixed breeds.

Keyword: Leishmaniasis, *Phlebotomus*, Ectoparasite, Genus.

IMPACT OF HIGHWAY TRAFFIC ON MILK CONTAMINATION WITH HEAVY METALS

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Abstract

These days, food safety and traceability control during the production of milk and dairy products is becoming a key criterion for consumers due to new requirements for the prevention of various diseases. In this experiment, samples of raw cow's milk were collected from dairy farms stationed near highways and in rural farms in Polog region. Concentrations of selected heavy metals such as Cu and Mn were determined by Agilent 55A flame atomic absorption spectroscopy and Agilent 240Z graphite atomic absorption spectroscopy for Cd, Pb, Ni, Zn was used. The content of cadmium and lead showed higher concentrations in milk samples from areas with intense traffic than in milk from unpolluted green areas. The obtained results confirm that attention must be paid to circumstances come to have a continuous emission of heavy metals into the environment.

Keywords: milk, heavy metals, AAS, highway traffic.

STATISTICAL REVIEW OF TOURISM AS A CONCEPT FOR INTENSIVE ECONOMIC DEVELOPMENT

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Abstract

Today's chaotic fast way of living with all its challenges, needs and shortcomings leads to an increase in people's needs in relation to their daily functioning. It is from here that the question arises: Can the daily needs of people unobtrusively lead to the favoring of certain economic branches or activities that would lead to accelerated economic development? The answer would certainly be yes, but without emphasizing any economic-economic or industrial activity. Namely, it must be noted that tourism is still one of the most important links for the development of any economy, because it is especially the domain that includes vacations, recreation, and trips that people make outside of their place of residence. In fact, other economic activities such as: hospitality, agro-tourism, hotel industry, fashion, sports, recreational tourism are developed through the truzim. Business tourism, etc., which have a great impact on economic development as a concept for meeting the daily needs of people in that segment. That is why it is considered that tourism is one of the most important economic activities of all developed and developing countries, because tourism is an economic-economic system in which several subsystems are adapted to function, which lead to the development of tourism as an important economic branch in the country.

In the context of what was said earlier, this paper will target tourism as an economic activity both from an analytical and statistical aspect, whose parameters will give an answer to whether tourism as an economic activity moves economic development in a positive direction.

Keywords: tourism, development, activity, functioning, economy.

CHEMOMETRIC METHODS FOR THE CLASSIFICATION OF FERTILE SOIL

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Abstract

Fertile soils are a great asset for farmers, a fertile soil contains all the main plant nutrients. Sometimes soil fertility and quality decline due to overuse of land by farmers. To determine the fertility of the soil, it is necessary to analyze the inorganic components of the soil, and a fertile soil also contains organic matter that improves the structure of the soil.

In this research, 9 soil locations were analyzed, 5 samples were taken in the city of Tetovo and four samples in the surroundings of Tetovo, the samples were taken at a depth of 10 cm.

First, all the samples were dried at 110°C and then recorded with the infrared spectrophotometer. In order to provide the maximum important chemical information, the data obtained from IR spectroscopy have been processed using chemometric methods for classification.

From the obtained results we can conclude that chemometric methods can be used for the classification of fertile soils.

Keywords: Soil, Chemometric IR spectroscopy.

RELATIONSHIP BETWEEN CALVING SEASON AND MILK PRODUCTION TRAITS OF DAIRY CATTLE

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Abstract

The pursuit of higher milk yield is a primary objective for every modern and progressive farm. Achieving this goal requires efficient farm management practices, such as modern breeding of dairy cows and determining the optimal season and age for first calving. The aim of this study was to investigate the effect of the calving season on milk production characteristics in sixty (60) Holstein Friesian cows. The lactating cows were separated into three groups (X, Y and Z), all of which had concluded their initial lactation between 2008 and 2014. Various factors were analyzed by gathering information from the historical records of the Pelagonia dairy farm as well as the State Institute of Animal Husbandry. Descriptive statistics and LSD method were used to calculate the statistical significance of the differences in the seasons and the milk yield traits at groups of cows. In the selected groups of cows, the autumn season exhibited a statistically significant difference of 0.05 in Daily milk yield when compared to spring and summer seasons. Furthermore, the results for the 305-day lactation period yield, indicate that the winter season demonstrated a significant difference of 0.05 in comparison to the spring and summer seasons. There was a statistically significant

difference of 0.05 in Total milk production during the autumn season compared to the spring and summer seasons.

Similarly, there was a significant difference of 0.05 observed during the winter season compared to the spring and summer seasons. The findings presented in this paper are expected to make both theoretical and practical contributions to the advancement of cattle husbandry.

Keywords: Calving season, Holstein-Friesian breed, Milk production traits.

NEW FINDINGS OF PARASITE FAUNA OF OHRID BLEAK (*ALBURNUS SCORANZA*) FROM OHRID LAKE (MACEDONIA)

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Abstract

Lake Ohrid is the largest and most important natural lake in Macedonia, the oldest in Europe, and from a biological point of view, the most important stagnant water ecosystem on the continent. Ohrid bleak is numerous in the basin of the Neretva River, especially in the Ohrid and Skadar Lakes, in which it has a prominent economic importance. The scales of this fish are used to make the famous Ohrid pearl. Fish material from 7 specimens of Ohrid bleak sampled from the Ohrid Lake, were subjected to routine identification, dissection, and observation, as well as, examined for parasitological investigations. Cleaned parasites were separated, put in appropriate fixatives, and prepared for determination using techniques of staining and clearing. The parasite specimens were identified using the reference keys of parasite determination. Common statistical analyses by calculation of prevalence and mean intensity of parasite species were used.

The parasitological examination showed that 4 out of 7 examined specimens (57,14%) are infected with parasites. Four parasite species were identified: one monogenea (*Dactylogyrus* sp.) on the gills, one protozoa (*Ichthyophthirius multifiliis*) on the gills, one nematode (*Raphidascaris acus*) in intestine and one cestode (*Caryophyllaeus* sp.) in intestine. The most prevalent parasite species was

Ichthyophthirius multifiliis (73,30%), while the highest intensity of infestation was recorded with Dactylogyrus sp. (5,43). The presence of parasites is detrimental to fish populations and can result in high mortality, weight loss and reduced fertility in both aquaculture and open water fish, especially in waters contaminated by industrial and urban pollutants. Poor water quality and lack of nutrients can cause the emergence of parasitic diseases. Parasites in the waters where they are present cause a decrease in the number of both juvenile and adult categories of fish, thus directly affecting the fish stock in a country.

Keywords: parasite fauna, Ohrid Lake, Alburnus scoranza, prevalence, water.

THE INFLUENCE OF HALOPHILIC BACTERIA ON THE FISH MEAT QUALITY

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Abstract

Salting, together with the process of drying and smoking, is one of the oldest ways of fish preserving. Salting acts on the development of microorganisms in such a way that the salt takes away the water, and as a consequence, growth arrest, sporulation or death of the bacteria occurs. Salt concentration above 10% in fish meat slows down the development of most putrefactive and proteolytic microorganisms, including pathogenic species. Higher concentrations of salt have a bactericidal effect on bacteria, stop growth, while some species sporulate. Only a relatively small number of microorganisms, called halophilic, can grow on nutrient media with increased salt concentration.

Microorganisms, according to salt sensitivity, are divided into halophilic microorganisms, halotolerant microorganisms and molds (Bergey's Manual of Systematic Bacteriology, 2003). Halophiles are those microorganisms that tolerate increased salt concentrations well, and are divided into facultative halophiles that do not need salt for their development, and non-facultative halophiles that need salt for growth and reproduction, in concentrations of 2%.

True halophiles, which include species of the genera *Halobacter* and *Halococcus*, can reproduce at salt concentrations of 15-25%. Moderate halophiles, including species from the families *Bacillaceae*

and Vibrionaceae, as well as species from the genus *Micrococcus* can grow at salt concentrations of 3-15%.

Halotolerant species belonging to Micrococcaceae and Corinebacterium tolerate salt concentration up to 5%. Halotolerant bacteria are bacteria from the genera *Micrococcus*, *Pseudomonas*, *Leuconostoc*, *Vibrio* and *Streptococcus*. The most sensitive genus to salt is the genus *Clostridium*.

Most halophilic microorganisms are not pathogenic for humans, with the exception of bacteria from the genera *Vibrio*, *Salmonella*, *Bacillus*, *Pseudomonas*, *Staphylococcus*, *Clostridium*, etc.

Spoilage of food caused by halophilic bacteria is manifested by a change in its organoleptic properties (change in color, appearance of mucus, and sometimes the appearance of foreign odors and gases).

Keywords: fish spoilage, halophilic microorganisms, halotolerant microorganisms, salt.

THE EFFECTS OF CAFFEINE ON GARLIC (*ALLIUM SATIVUM*) GROWTH

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Abstract

Caffeine is a chemical substance found in different products such as: coffee, coffee beans, tea, soft drinks, cocoa and chocolate and is also found in some prescription and non-prescription drugs, including cold, allergy and pain relievers. It is reported that caffeine is most commonly used to improve mental alertness, but it has many other uses too. Caffeine acts as a stimulant by exerting an effect on the central nervous system. The effects of caffeine on the body may begin as early as 15 minutes after ingesting and can last up to six hours. Caffeine's effects on plants are less commonly known. This scientific study was conducted to monitor the effects of caffeine on garlic plants. Coffee was used as a source of caffeine. The garlic plants were planted before and their average length was 9.4 cm. There was a total of 8 pots; 4 were used to control and the other 4 for the experiment. The seeds were each watered with caffeine solutions upon the initial planting. After that, no more caffeine was provided to the plants. Every day, the length of control and experimental plants was measured in order to compare the difference between them. After we added the caffeine mixture to the "experimental" pots, the garlic plants grew faster. This increased rate in their growth continued for 16 days. During this time their length increased highly (36.837 ± 2.4178 , $p < 0.05$) so a significant difference was observed while the "control" pots which were watered without caffeine had a slower growing process. The plants were monitored for another 12 days.

During this time the rate of development of the “experimental” pots slowed down significantly (29.157 ± 6.75272 , $p < 0.05$).

Keywords: caffeine, caffeine’s effect, coffee, germination, growth, plant.

SELECTION OF QUEENS BY IMPLANTATION WITH THE SEMI-CONTROLLED METHOD OF BREEDING MALES FROM SELECTED SOCIETIES

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Abstract

The study of the selection of local queens, with the semi-controlled method, is very easy to apply due to the conditions required by the isolated selection as well as the laboratory one. The results of several years of study are very satisfying. We have created a quality queen that fulfils our needs in terms of yield flow, the instinct of keeping the swarm inside the bee box, in reducing the aggressiveness of the bees and its hygiene.

Due to the natural and climatic conditions of our territory, it is necessary to cultivate the local queen as much as possible. In North Macedonia this queen is protected by law and is called "Apis Mellifera Makedonika". Cultivation of this queen in our territory brings yield. Our queen winters well and in the spring develops in relation to the flow of nature. When needed, it saves food until nature has an abundant flow for it to develop to its maximum.

In this semi-controlled method, we mostly worked with the selection of beetles from selected societies. As a queen is bred with many beetles, she receives genes from all of them, which must be of good quality, so that the offspring will be of better quality.

Selection in bees is a complicated process because the breeding of a queen takes place during the flight in the air while the beekeeper cannot influence. Therefore, emphasis should be placed on the addition of selected beetles to increase the likelihood that the queen will be fertilized by the selected beetles.

So far, our results are very satisfying. Selection in beekeeping proceeds in slow steps, so results are seen after a few years when a higher percentage of desirable parameters are achieved.

Keywords: queen, selection, Apis Mellifera, yield, breeding, population, parameters.

CHANGES IN THE PHYSICO-CHEMICAL COMPOSITION OF MILK AS A RESULT OF THE DEGREE OF CONTAMINATION OF RAW MILK

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Abstract

The quality of raw milk is determined by several factors, including physico-chemical parameters (fats, proteins, lactose, skimmed dry matter, specific gravity), even by the increase in the number of somatic cells (SCC) and the total number of colonies bacteria (CFU). Somatic cells (SCC) are an important component found naturally in milk, they are excreted during milking and are used as an indicator of the hygienic correctness of milk.

The object of analysis in this scientific paper was the changes that occur in the physico-chemical composition of raw milk as a result of the degree of contamination of raw milk. The analysis of the physico-chemical properties of raw milk was carried out in two dairies during one year. Examination of raw milk from dairies is done twice a month, while examination of stored milk is done daily.

According to the obtained results, it can be observed that some chemical parameters in milk as a consequence of the degree of contamination show significant changes.

It should be mentioned here that in almost all the samples examined we had a decrease in the level of lactose, which otherwise is the most stable parameter in milk and can only change due to the amount of water and not due to other parameters. In addition, the bacteria present in milk use lactose for their growth, so the increased number of microorganisms also affects the reduction of lactose.

Keywords: physico-chemical parameters, raw milk, somatic cells, quality.

AIR QUALITY INDEX (AQI) AND PM-(PM-10, PM-2.5), AIR POLLUTION IN SOME VICINITY IN THE REPUBLIC OF NORTHERN MACEDONIA

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Abstract

Air pollution in big cities is a serious problem. This happens as a result of weak cooperation between central and local institutions. This problem is more present in some cities in the Republic of North Macedonia. With the start of the heating season in winter, like every other season, air pollution is undoubtedly updated. Due to the large use of fuels, solid and liquid, there is a lot of pollution in some larger cities in our country. The paper collects some data from measuring stations in several cities that have caused and presented greater pollution and risk. The data were collected every day in the period from 30.01.2019 to 04.02.2019, at different times of the day such as in the morning: 8.00 and 9.30, and in the evening 18.00, 19.30. In addition to PM particles, data have also been collected for some gases such as: CO, SO₂, NO₂, as well as the percentage of AQI (Air quality index), Exceeding the average value is calculated if it exceeds 50 micrograms per cubic meter. We have more numerous and more drastic exceedances in the cities of Tetova and Skopje, where in some cases the value has been exceeded several times. Several factors are considered as causes of pollution.

Keywords: Air pollution, Pm-10, Pm-2.5, Air quality index.

EXPLORING THE POTENCY OF WILD MUSHROOMS: A COMPREHENSIVE REVIEW OF ANTIFUNGAL ACTIVITY IN THE REPUBLIC OF NORTHERN MACEDONIA

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Abstract

In the Republic of Northern Macedonia, according to the latest official data from the mycological research of macromycetes, close to 2000 species are registered. The largest number belongs to basidiomycetes with 1735 species and the rest belongs to ascomycetes with 255 species. These mushrooms are used in nutrition, biotechnology, medicine and pharmacy. A large number of these wild mushrooms also have antibacterial, antifungal and antiviral effect. In this paper we will mention only the types of fungi that have antifungal effects and activity which have been recorded in the research so far in the Republic of Northern Macedonia. In the paper we present 22 species of high and cultivated high fungi that have antifungal activity. The most popular species of macromycetes with antifungal effect are: *Agaricus bisporus*, *Agrocybe cylindracea*, *Boletus edulis*, *Ganoderma lucidum*, *Flammulina velutipes*, *Laetiporus sulphureus*, *Lactarius deterrimus*, *Lentinus edodes*, *Meripilus giganteus* and *Tricholoma giganteum*. etc., mainly belong to the phylum Basidiomycota. These mushrooms have been found isolated ingredients with antifungal activity affecting certain pathogenic fungi as we can mention: *Alternaria alternate*, *A. brassicae*, *Candida albicans*, *Aspergillus niger*, *Aspergillus fumigates*, *Fusarium*

gramineum, *Microsporus canis*, *Neurospora crassa*, *Penicillium inflatum*, *Sacharomyces cerevisiae*. These fungi mainly belong to the phylum Ascomycota.

Keywords: wild mushrooms, macromycetes, antifungal activity, Republic of Northern Macedonia.

THE RULE OF IPARD PROGRAM ON THE ECONOMIC DEVELOPMENT OF NORTH MACEDONIA WITH SPECIAL EMPHASIS ON AGRICULTURE SECTOR

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Abstract

Successful implementation of the financial policy program in developing countries, is of a crucial importance for increasing the capabilities of the domestic agriculture sector to fulfill the expectations for domestic production. However, only national subsidy programs are not sometimes enough to make stronger the domestic production. Ipard program is one of the most important programs to support the agriculture sector during the pre-accession period for member countries in the EU. As a small country, with no high-tech industries developed, North Macedonia must focus on its competitive sector. The experience from the Independence Day back in 1991 up to now, has confirmed that the potential for economic development of the country are in few sectors. One of the main sectors is the agriculture sector. State subsidies for years are in place, but not enough to contribute for the development of this sector, mainly as a result of the lack of effectiveness of the agriculture policies. The Eu funds are the main focus for agriculture development.

Macedonia has just started the third Ipard program. The importance of successful implementation of Ipard program, direct influence in the domestic production and as well as the impact that Ipard program has had in the domestic economic development is the main target of this research.

Keywords: rule, Ipard, development, emphasis, agriculture.

SPATIAL VARIATION OF SOIL PROPERTIES FROM MUNICIPALITY OF DOLNENI USING GEOGRAPHIC INFORMATION SYSTEM TECHNIQUES

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Abstract

Geographic information system technique gives various possibilities in the agriculture. This tool gives synthesis of soil analysis while creating database that includes extensive data on the sampled locations. On the other side, provides methods to predict parameters of unsampled locations. Almost all agricultural data has some form of spatial component, and given voluminous data, GIS allows you to visualize information that might otherwise be difficult to interpret. Tobacco production in our country has a long history. Soil properties vary spatially and their monitoring is essential to understand the land use and effective management in sustainable tobacco production. In our research, a study was conducted to explore the spatial variability of major soil nutrients in an oriental tobacco grown region of municipality of Dolneni. One hundred and fifty soil samples were collected and exact sample locations were recorded using a hand-held global position system. Following soil properties were analyzed: pH, humus content, total nitrogen, available phosphorus and potassium, carbonates and physical clay. Data was normalized and classical and geostatistical analyses were used to assess the spatial correlations and describe the soil properties. The experimental semi-variogram model was quantified and spatial transformation was performed to determine the most appropriate model to use with the parameters of the

generated map. According to the results, high variability of soil properties is obtained only for available phosphorus and potassium and this is mostly related to the different soil management practices. The results of the research provide recommendations for best management practices, especially in fertilization.

Keywords: soil properties, spatial variability, geographic information system, tobacco soils.

THE INFLUENCE OF THE CONTENT OF HUMUS, TOTAL NITROGEN, AND THE METHOD OF CULTIVATION ON SOME QUALITATIVE FEATURES OF STRAWBERRY

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Abstract

The qualitative composition of the ripe fruits of strawberry (hybrid variety-Alba) was examined in growing areas in Glumovo (open field) and Shishovo (in greenhouse conditions) with some different agrochemical characteristics, i.e. in Glumovo the average humus values of 2.76%, total nitrogen 0.182% and pH 6.8 were significantly higher than those found in Shishovo (1.72%, 0.116% and 6.19). In ripe strawberry fruits, the amounts of dry matter, total sugars, ascorbic acid (vitamin C), and total nitrogen found were significantly dependent on the agrochemical properties and the method of their cultivation. In strawberry fruits grown in greenhouse conditions (Shishovo), the amount of dry matter of 6.81%, total sugars 3.68%, ascorbic acid (vitamin C) (64.57 mg/100g FW) and total nitrogen 9.10 mg/g-1 DM were significantly lower, in contrast to the value of pH 3.56 which was higher in relation to the average values found in strawberry samples grown in an open field (Glumovo).

Keywords: Strawberry, agrochemical content, open field, greenhouse condition.

MOLECULAR STUDIES IN OLIVE. A REVIEW ON GENETICS AND GENOMICS DEVELOPMENTS IN OLEA EUROPAEA L

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Abstract

The olive tree (*Olea europaea* L.) is amongst the most cultivated crops in the Mediterranean Basin, presenting a major economic importance for the region. Identification process of olive trees used to be performed based on morphological markers, meanwhile during the last three decades molecular markers in olive have rapidly evolved and are already applied for various purposes. The usage of molecular markers is primarily related to genetic diversity and phylogenetic analysis, owing to their validity, stability, and simple usage. In addition, molecular studies in olive are also being applied for genome mapping, gene expression, inheritance patterns and marker assisted selection. Numerous techniques have been constantly developed and employed in olive studies, nevertheless a handful of them have received positive outcomes. The recent advances in DNA sequencing, ESTs and SNPs, as well as traditional DNA markers (e.g. RAPDs, AFLPs, ISSRs and SSRs) have led to high throughput analyses of olive cultivars. Modern functional markers and transcriptomics will have a great impact and are expected to accelerate further progress in taxonomy, olive varieties identification, genetic map construction, conservation strategies and olive breeding. In this review we introduce the most relevant molecular markers, applied in olive tree and discuss the recent techniques, focusing on utilization of each approach.

Keywords: olive (*Olea europaea* L.), olive studies, molecular markers, genetic diversity, genome analysis.

EMAMECTIN BENZOATE: A REVIEW AS AN EFFECTIVE ALTERNATIVE FOR CONTROLLING TUTA ABSOLUTA IN TOMATO PLANTS

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Abstract

The tomato leaf miner, *Tuta absoluta*, has become a significant threat to tomato crops in Europe and North Africa, leading to the extensive use of insecticides. However, the effectiveness of many insecticides is limited due to the cryptic nature of the larvae and the development of resistance. This study investigates the use of Emamectin benzoate, a bioinsecticide derived from the avermectin family, as an alternative for controlling *Tuta absoluta*. The experiment was conducted over three years in a greenhouse in a coastal area, using pheromone traps to monitor pest populations. Emamectin benzoate was applied at a dosage of 150 grams per 100 liters of water, with two treatments per generation at 14-day intervals. The technical effectiveness of the insecticide was assessed by analyzing the number of attacked and uninfected leaves and fruits. The results showed that Emamectin benzoate provided effective control of *Tuta absoluta*, with technical efficacy ranging from 85% to 92% on leaves and from 83% to 91% on fruits. These findings suggest that Emamectin benzoate can be a

valuable tool in integrated pest management strategies for managing *Tuta absoluta* infestations and reducing reliance on conventional insecticides. Further research and field trials are needed to optimize its application and evaluate its long-term effectiveness in different growing conditions.

Keywords: tomato leaf miner, *Tuta absoluta*, Emamectin benzoate, bioinsecticide, integrated pest management, greenhouse, pheromone traps, pest control, insecticide effectiveness, tomato crops.

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