

Management of health care educational project for students in medical staff

Elizabeta Popova Ramova (corresponding author)

High medical School-department for physiotherapist education, University „St.Clement Ohridski"
Bitola, Republic of Macedonia

Tel.00389 70 370 864 e-mail: betiramova62@yahoo.com

Anastasika Poposka

Medical faculty-Skopje, University „, Kiril and Methodius" Skopje, Republic of Macedonia

Tel: 00389 2 3064 278 e-mail: ninomiki@t-home.mk

Biljana Angelovska

High medical School-department for physiotherapist education, University „St.Clement Ohridski"
Bitola, Republic of Macedonia email: biljana_angelovska@hotmail.com

Leonid Ramov

Medical faculty, Stip, University „Goce Delcev" Stip, Republic of Macedonia

Email.:leonidwow@yahoo.com

Abstract

Health profession education programs often struggle with barriers to implementing educational initiatives, because students have not certificate to work with patients so they can earn for it. All activities in society must be established on voluntary way. Education Program must have aim to help tomorrow's healthcare professionals gain skills and knowledge they need to work effectively in teams to provide efficient, collaborative and rehabilitation in home condition. The students, future medical staff, with those projects have possibilities to increase their professional skills, increase communicate skills and address these complex of activities to Ministry of health what challenges in health system are need. The aim of our project was to educate the future medical staff, physiotherapist how to manage one actual health problem, and second to have some data about health culture of our population about prevention of osteoporosis. In the project were predicted education presentations to be done in front old people from different towns from South-West Macedonia also to organizations of women, educating personal, special groups of people who have problems with bones. The educational program was made of Power Point presentations on Topic: Non-pharmacological treatment of osteoporosis. The Students were formally educated how to help their listeners complete the questionnaires. From all 60 students physiotherapist from 2nd. and 3rd year 34(57%) took part in the project. Based on evaluations and faculty feedback, we can make changes to goodness the course each year. Our goal is to have interprofessional learning experiences in all years of training. The future projects shall have good collaboration with university and government, because we have no limits. To found collaborating company who shall financing project is difficult, specially for students from High Medical Schools, because they not make transcription of medicaments. We must expand collaboration with universities from outside in borders of EU.

Introduction

Education system in our country is compatible with Bologna declaration for education in Europe. The Ministry of education and sciences is organizing many educational programs for educational staff in all levels of education (1). The education programs like FP7, TEMPUS and ERASMUS are meant for educators in High education. We are deciding to make our own experience after participate in those educational programs. The first experience was in one local municipal project to access the physical activity and spine deformity in school children. The result of this project after it finished was defense of doctoral study from the manager of it (2). We are realized the other project in the period of 01.10.2011 to 01.07.2012. The title of this projects was „Prevention of osteoporosis-non pharmacological management". Our experience were represent in monographic published in 2012 (3). Those two projects were our experiences how to organize, manage and select the results of them. The leading thought was how to improve education and to help the health system through analysis of the target populations.

Health profession education programs often struggle with barriers to implementing educational initiatives, because students have not certificate to work with patients so they can earn for it. All activities in society must be established on voluntary way. Education Program must have aim to help tomorrow's healthcare professionals gain skills and knowledge they need to work effectively in teams to provide efficient, collaborative and rehabilitation in home condition(4). Undergraduate students in physiotherapy from Department of physiotherapy education, and postgraduate students physiotherapist can be involve in some educational projects like cooperation between Ministry of education and other Ministries like Ministry of labor and social care or Local development. Those projects can be manage like one interprofessional collaboration, of mentor, his students from educational institution, local organization for education in every municipality and local representative OF Ministry of labor and social care. There are many examples of those models of education I consulting studies (5,6,7).

The students, future medical staff, with those projects have possibilities to increase their professional skills, increase communicate skills and address these complex of activities to Ministry of health what challenges in health system are need (8,9).

Today's patients have complex health needs and typically require more than one discipline to address issues regarding their health status (10). This collaboration with population and different companies from society can improve the new technologies in health care system. The population is that who use our favors during health care, they pay for that and have right to use new methods to increase their health.

The possibilities for education of the students in medical skills, as physiotherapists we view through realization of a project which will educational importance for improving the health culture of the population and the ability for more practice for the students.. In consulting study students have aim during project to increase their skills in cooperation, collaborative practice include responsibility, accountability, coordination and communication (11).

For accomplishment of an international project we took a topic from international health system throughout the world, following the lead of World health organization from 2011. The decade 2011-2020 was named for prevention of falling for old people and physical activity for all age groups. The fall as a risk of a fracture and the knowledge for its prevention is an attractive topic in many published works. (12,13). The work was lead by VMS Bitola and the person in charge was a professor who has 15 published works on the internet for rehabilitation of this type in his country and worldwide. We quote only the ones published on the internet(14,15,16). The physiotherapist student are competent for giving advices for healthy food, exercises, light therapy as prevention against osteoporosis and its complications. These complications are learned in their studies.

For picking a co worker from the economy we offered three foreign firms who are associated with physical therapy like Medicus help – Skopje, Medicus Greece, which sells orthotic equipment also to Zepter which sells bioptron lights which are used in light therapy, also ESI Italy which is selling herb associated therapies and calcium associated.

We offered them corporation and promotion of their products as a part of prevention of osteoporosis. For each interviewed they shall pay 1,5 euro.

The aim of our project was to educate the future medical staff, physiotherapist how to manage one actual health problem, and second to have some data about health culture of our population about prevention of osteoporosis.

Material and method

Organization of project

The project lasted nine months from 01.10.2011 until 01.07.2012 during the education. After receiving agreement from the cooperator who had to finance it, the project was confirmed at the university where we were allowed to present it to each target group with defined financial construction. All the funds from the project who would be earned will be used for education of the students who will attend educational congresses etc. With this we:

- Confirmed the project how it will be done,
- Confirmed Power Point presentation for each target group,
- Took competent presenters,
- Valued exchange of experience between students.

Predicted target groups for education

In the project were predicted education presentations to be done in front old people from different towns from South-west Macedonia also to organizations of women, educating personal, special groups of people who have problems with bones.

Content of the educational program

The educational program was made of Power Point presentations on Topic: Non-pharmacological treatment of osteoporosis.

The Students were formally educated how to help their listeners complete the questionnaires.

The presentation ended with pieces of paper containing info about substitution therapy done by sodium, chondro protectors and herbal therapy.

Questions asked

In order to get info from the listeners we used 5 types of questions.

1. Allowed access to personal info like height and weight.
2. Modification of the FRAKS questionnaire with 8 questions for prediction of risk factors for osteoporosis(20,21,22), positive family anamnesis, past fracture, alcohol consumption, smoking, soda drinks, gynecological surgery, diabetics, problems with thyroid gland etc.
3. Info about weakly and daily intake of products containing calcium.
4. Daily and weekly physical activities.
5. Personal opinion about prevention.

Results

From all 14 teachers 3(21%) took part in the project. From all 60 students physiotherapist from 2nd and 3rd year 34(57%) took part in the project. There were 27 presentations made with 1092 listeners and 947 filling up questionnaires. The co-worker from the economy sector funded 1350 Euros from where (65%) 882 Euros were used for active work of the students in the project done by taking part in 3 meetings and 3 congresses. From all 947 listeners 108 (11%) were male, other 839(89%) were female. We have analyzed only the females. The distribution of the listeners by age is show on the table 1.

Tab.1 Distribution of age groups

Age	Men	Female	Total	%
≥80 год	4	3	7	0.7
76-80	2	15	17	1.8
71-75	2	38	40	4.2
66-70	4	61	65	6.9
61-65	8	111	119	12.6
56-60	16	92	108	11.4
51-55	8	134	142	15
46-50	15	100	115	12.1
41-45	10	108	118	12.5
36-40	12	91	103	10.9
31-35	27	86	113	11.9
Total	108	839	947	100
%	11	89		

Incidence of risk factors by age and sex (female) is showing in table 2.

1. Low body mass
2. Family positive anamnesis of osteoporosis
3. Positive fracture anamnesis
4. Alcohol intake
5. Tabaco intake
6. Cola drinks intake
7. Use of drugs corticosteroids
8. Gynecological surgical treatment (ovarectomy).
9. Rheumatoid arthritis

Tab. 2 Incidence of risk factors by age groups

Age	1	2	3	4	5	6	7	8	9
≥80 год	/	/	2	/	/	/	/	1	/
76-80	/	4	2	/	1	2	1	/	1
71-75	/	7	16	/	2	9	3	9	/
66-70	/	8	10	/	6	5	6	6	/
61-65	/	19	28	/	13	15	/	3	/
56-60	1	15	11	/	26	28	6	12	/
51-55	/	13	9	/	44	24	12	21	/
46-50	/	13	8	/	28	40	5	16	/
41-45	1	9	14	/	37	36	5	13	/
36-40	/	13	7	/	31	47	2	2	/
31-35	2	12	13	/	35	45	2	5	/
Total risk factors	5	115	120	/	223	251	42	88	1
%	0.6	14	14.3	/	27	30	5	11	0.1

From table 2 we can see that the largest incidence is from risk factors associated with smoking and intake of cola drinks in age groups from 30-55 years. The daily intake of milk and fish in age groups is showing on table 3.

Tab.3 Quantity of daily intake of milk and weekly intake of fish by age groups

Age	Milk	Fish	Calcium supplement intake
≥80 год	3	3	1
76-80	14	14	7
71-75	35	29	13
66-70	53	53	24
61-65	98	97	32
56-60	73	69	19
51-55	89	86	13
46-50	76	80	11
41-45	92	93	6
36-40	75	78	7
31-35	83	73	8
Total	691	675	141
%	82	81	17

From all questioned the percent of consumption of milk and fish is high between 81 and 82 percent, while intake of calcium after menopause on that population is low only 30%. The calcium intake was counted on all women older than 56 years. The consumption of milk by them was 276 (86%). From table 4 we can see the daily activities in age groups in form of amateur sport or daily walk lasting 30-60 min.

Tab.4 Distribution of population who have physical activity

Age	Walking 30-60 min. daily	Amateur sport
≥80years	2	
76-80	14	
71-75	34	
66-70	60	
61-65	105	19
56-60	78	11
51-55	94	14
46-50	77	18
41-45	90	21
36-40	75	26
31-35	78	45
Total	707	154 (30-65 years.)
%	84	21

The amount of physical activities in all female population in form of daily walks lasting 30-60 min is 84%. The amount of questioned age groups who can do sport or other forms of physical activities is 774 from it 154 (21%) are doing sport. In question of if they would take part in organized age groups for exercises for prevention of osteoporosis and prevention of fall answers are showing in table 5.

Tab. 5 Positive opinion for physical activity

Age	Exercises yes	Participation of 1.5 Euro
≥80 год	3	3
76-80	10	10
71-75	28	28
66-70	44	44
61-65	91	91
56-60	77	77
51-55	87	87
46-50	80	80
41-45	81	81
36-40	79	79
31-35	73	73
Total	653	653
%	78	78

The 78% have positive opinion for physical activity and participation of 1.5 Euro was not economic problem for them.

Discussion

Staff and students collaboratively develop topics and project. Students were continually engaged and asked to suggest new ideas and directions to increase the number of listeners. The idea to make our own exercise program was theirs, and they have done it highly technical. Material support from the partner and motivation from the manager was continual. The educational program was represent in some social groups and it was one experience. This model of education is practice in many schools in USA (23,24,25,26).

The effect of the education is shown on the project's participation of 34 from whom 57% were volunteers. 24 of them were awarded certificates for ability of doing the process of prevention of osteoporosis. Those 24 students did 50 questionnaires and 1 presentation each of them.

Teem of the project created program of exercises for preventing fall for older people, exercises for back correction, and for holding balance. This program now is available for all students for their future educations, as a program of High Medical School of Bitola. With these activities we improved in new tendencies for treatment of old people. Application of exercises for balance and prevention of falls (27).

Risk factors for osteoporosis is defined in the decade 2000-2010 when it was confirmed and the risk factors and the complications also from the untreated and early not recognized form. The FRAKS questionnaire is used tool which can be modified national wide. We did that so we use 9 questions instead of 5.

From our research we found that risk factors for our population is smoking and drinking cola drinks. The end of consuming these products should be the future objective of the whole society.

Increase in physical activity and calcium intake can indeed maximize bone gain chiefly at load sites. Lifestyle habits including calcium intake, general nutrition and weight-bearing exercise during adolescence and early adulthood contribute up to 20% of the observed variation in the attainment of peak bone mass (28,29,30). In our population the formation of bone mass was finished. The calcium intake by them is only important to keep it or to decrease bone lose in different age groups. The daily

intake dose of calcium is from 800-1200 mg. The most of them were intake 560 mg. daily with milk, and 352mg weekly with fish.

In question of consuming food rich with calcium, we can see that our people are fed relatively good by themselves and has enough percentage of positive health actions in the feeding process. Calcium is important supplement, but not as high taken as it should be. It is so because people don't take it unless they are consulted by their doctor, no matter that they all know it is important for the bones.

Low body weight or low BMI (31,32) is a well-recognized risk factor for fracture, by our population it was low by 5 (0.6%), 68% have increase body weight and 31.4 % normal.

Lifestyle factors related with bone loss in our study are excessive alcohol consumption, cola and caffeine products consumption, smoking, use of corticosteroid medication and gynecology surgery intervention. There are exactly definite like a risk factors in references worldwide (33,34,35). We are not founded with excessive alcohol consumption, and cola products are 30% consumption weekly, and 27% are smokers. Positive family anamnesis is by 14 % and 14.3% have fractures before. Usually like a risk factor for osteoporosis is taking present osteoporosis fracture, we have no data for this type of fracture. In one consulting study the data of previous fracture can mean bad quality of bone tissue (38). Genetics determine 60-80% of peak bone mass (39).

The main objective of physical exercise in the prevention or treatment of osteoporosis is to reduce fracture incidence. Exercises interventions for clients have preventive role and with those is good to start early in adolescent age 11-14 years (40). In adult age they can be exercises with weight bearing to hold bone mass (41). For old people with osteoporosis they have role to reduce risk for fall and fracture after it (42). Where we are in all this? Our population in adult age have some sport activities but they are 21% active. The low percent is following with decrease of bone mass index. The whole population have daily walking activity of 30-60 min. (it is standard for old people)(43), with 84%. This is showing that population is relatively active. They have positive opinion for organization of physical activities by age groups 78%, and it will not be have negative impact on their personal economy.

During the project on every aimed group was suggesting participate in exercise group. That was not happened with reason of have no place. We done exercises program and educate students to perform it. Students can use it in their future practice.

Conclusions

Every beginning is difficult, special for students who meet first time the clients, future patients. Based on evaluations and faculty feedback, we can make changes to goodness the course each year. Our goal is to have interprofessional learning experiences in all years of training. The future projects shall have good collaboration with university and government, because we have no limits.

To found collaborating company who shall financing project is difficult, specially for students from High Medical Schools, because they not make transcription of medicaments. We must expand collaboration with universities from outside in borders of EU.

- In this project students were learning follow:
 1. Dietary assessment is the first step in identifying patients in need of counseling and in guiding the practitioner to offer advice that is directly relevant to the patient's dietary habits and the factors that influence them. Our students were certificate to do that for prevention of osteoporosis by this project.
 2. The physical activity is important preventive factor in all age groups.
 3. The physical activity by old people, together with medical treatment of osteoporosis can prevent falls and disability and it have great social economic impairment.

- From this project we can not done some epidemiological conclusions from our population but we can use the model of accepting data from population during one student projects.
- Future projects can be organized to educate students and to collect data from population from some actual health problem.

Acknowledgements

We wish to thank Olivera Stojanovska, general manager of ESI Italia in Republic of Macedonia, for financial support of our project.

References

1. www.ministryofeducation.gov.mk
2. Popova Ramova E.: The prevention of spine deformity by long bad position in school children. Doctoral study, Defence:24.12.2010.medical faculty, Nis. R. Serbia.
3. Popova Ramova E.: Prevention of osteoporosis, non pharmacological management. Skopje.2012. COBISS.MK-ID 92169994.
4. Lumague M, Morgan A, Mak D et al. (2006) Interprofessional education: the students perspective. *J Interprof Care*, 20(3):246-53.
5. Countage L, Smith-Davis (1987). Interdisiplinary team training: a national survey of special education teacher training programs. *Except child*.53:451-9.
6. Briges D, Abel M, Carlson J, Tom KO, Wiak J (2009). Service learning in interprofessional education:a case study. *J Phys ther Educ*. 24:41-52.
7. Mitchell Ph, Crittenden RA (2000). Interdisciplinary collaboration: old ideas with new urgency. *Wach Public Health*. 17:51-3.
8. Canadian Interprofessional Health Collaborative (2010). A national interprofessional competency frame work. Available from: [http:// www.cihc.ca/files/CIHC IP Competences](http://www.cihc.ca/files/CIHC_IP_Competences).
9. Barr H, Kappel I, Reeves s, Hammick m, Freeth.D (2005). Effective interprofessional education: argument, assumption and evidence. Oxford: Blackwell Publishing.
10. Lumaque m, Morgan A, Mak d, Hanna M, Kwong J, Cameron C et al.(2008). Interprofessional education: the students perspective. *J Inter prof Care*. 20:246-53
11. Kasperski M, Toronto, ON(2010). Ontario College of Family Physicians;2000, Implementation strategies: Collaboration in primary care- family doctors and nurse practioners delivering, shared care. Available from: [http://www. cfpc.ca/ English/CFPC/CLFM/bibnursing/default.asp?s=1](http://www.cfpc.ca/English/CFPC/CLFM/bibnursing/default.asp?s=1).
12. Chang JT, Morton SC, Rubenstein LZ, Mojica WA, Maglione M, Suttrop MJ, Roth EA, Shekell PG(2004). Interventions for the prevention of falls in older adults:systematic review and meta-analysis of randomized clinical trials. *BJM.*:328-680.
13. Gillespie LD, Rowe BH (2009). Interventions for preventing falls in older people living in community. *Cochrane Database Syst Rev* SD 007146.
14. Popova Ramova E, Petkovska Jovanovska M, Angelovska B, Bozinovska I, Lozanovski N, Stavre vski Z.: Nonpharmacological management of osteoporosis. *Contributions*. No.15-16.2012.
<http://www.mnd-bitola.mk/attachments/article/23/Elizabeta%20Ramova.pdf> UDK616.71-007.234-07/-08.
15. Popova Ramova E., B Angelovska, I Bozinovska.:The Effect from Complexity Physical Therapy on Deckrease of Pain By Patients With osteoporotic lumbar Scoliosis. Open Access Scientific Reports. <http://dx.doi.org/10.4172/scientificreports.284>. Vol.1.Issue 5.2012.

16. Poposka A, Popova Ramova E, Petkovska Jovanovska M.: Questionnaire based screening investigation for risk detection of osteoporosis. Archives of public health. Vol.4,No.2.2012:30-33.
17. www.medicushelp.com.mk
18. www.zepter.com.mk
19. www.esitalia.com
20. Watts NB, Ettinger B, Le Boff MS (2009). Perspective FRAX facts. J Bone and Mineral Research. Vol.24,N:6.doi:10.1359/JBMR.090402.
21. Bolund m, TY Siu A, Mason BH, Horne MA, Ames RW, Grey AB et al.(2010). Evaluation of the Frax and Garvan fracture risk calculation in older women. JBMR.doi:10.1002/jbmr.215.
22. Hushimoto K, Ishitani K, Ohta H.(2009). Usefulness of FRAX and future, issues in women's health. Clin Calcium. 19(12):1742-8.
23. Sheldon M, Cavanaugh JT, Croninger W, Osgood W, Robnett R, Seigle J et al. (2012) Preparing Rehabilitation Healthcare providers in the 21st century: implementation of interprofessional education through an academic-clinical site partnership. Work; 41(3):269-75. Doi: 10.3233/wor-2012-1299.
24. Takanoishi S, Brissette S, Thorstod K.: Different roles, same goal: students learn about interprofessional practice in a clinical setting. Nurs Leadersh(Tor Ont);23(1):32-9.
25. University of Washington Center for Health Sciences Interprofessional Education (2010). Available from: [http://www.interprofessional.washington.edu/default.asp.\(2010\)](http://www.interprofessional.washington.edu/default.asp.(2010)).
26. US Department of Health and Human Services Agency for Health Care Policy Research (2010). Team STEPPS Home. Available from [http://teamstrepps.ahrq.gov/\(cited 2010\)](http://teamstrepps.ahrq.gov/(cited 2010)).
27. Body J.J, Bergmann P, Poonen S, Boutsen Y, Brugere O, Devogelaer J.P. et al.(2010). Non-pharmacological management of osteoporosis: a consensus of Belgian Bone Club. Osteoporosis Int. doi:10.1007/s00198-011-1545-x.
28. Inliano-Burns S, Saxon L, Naughton G, Gibbons K, Buss SL (2003). Regional specificity of exercise and calcium during skeletal growth in girls: a randomized controlled trial. J Bone Miner Res, 18:156-162.
29. Boss SL, Naughton G, Saxon L, Onliano-Burns S, Daly R, Briganti EM, Hume C, Nowsonon C et al. (2007). Exercise and calcium combined results in a greater osteogenic effect than either factor alone: a blinded randomized placebo-controlled trial in boys. J Bone Mineral Res 22:458-464.
30. Rizzoli R, Boonen S, Brandi ML, Burllet N, Delmas P, Reginster JY (2008). The role of calcium and vitamin D in the management of osteoporosis. Bone 42:246-249.
31. Kanis JA (2008). Assessment of osteoporosis at the primary health-care level. Technical report, University of Sheffield, South Yorkshire.
32. De Laet C, Kanis JA, Oden A et al.(2005). Body mass index as a predictor of fracture risk: a meta-analysis. Osteoporosis Int.16:1330-1338.
33. Kanis JA, Johansson H, Johnell O, Oden A, De Laet C, Eisman JA, Pols H, Tenenhouse A (2005). Alcohol intake as a risk factor for fracture. Osteoporosis Int.16:737-742.
34. Kanis JA, Johnell O, Oden A et al.(2005). Smoking and fracture risk: a meta-analysis. Osteoporosis Int.16:155-162.
35. Heaney RP, Recker RR (1982).Effects of nitrogen, phosphorus and caffeine on calcium balance in women. J Cal Clin Med.99:46-55.
36. Deprez X, Fardellone P (2003). Non pharmacological prevention of osteoporotic fracture. Joint Bone Spine.70:448-457.
37. Hiroto T, Hiroto K (2011). Diet for life style-related diseases to maintain bone health. Clin Calcium 21(5):730-6.

38. Chevalley T, Bonjour JP, van Rietbergen B, Ferrari S, Rizzoli R (2011). Fractures during childhood and adolescence in healthy boys: relation with bone mass, microstructure and strength. *J Clin Endocrinal Metab.* 96(10):3134-42.
39. Rizzoli R, Bonjour JP, Ferrari SL (2001). Osteoporosis genetics and hormones. 26:79-94.
40. Weaver CM (2008). The role of nutrition on optimizing peak bone mass. *Asia Pac J Clin Nutr.* 1:135-7.
41. Miura S, Nakamori M, Yagi M, Saavedro OL, Ikemoto S, Yamamoto S (2009). Daily calcium intake and physical activity status in urban women living on low incomes in Davao, Philipines: a primary study for osteoporosis prevention. 56 (3-4): 130-5.
42. Chan R, Woo J, Leung J (2011). Effects of food groups and dietary nutrients on bone loss in elderly Chinese population. *J Nutr Health Aging.* 15(4): 287-94.
43. Margues EA, Mora J, Carvolino J (2012). Exercise effects on bone mineral density in older adults: a meta-analysis of randomized controlled trials. *Age (Dor dr)* 34(6):1993-515. Doi:10.1007/s11357-011-9311-8.