

nCov PCR tests and radiological findings. Demographic features can aid in the prediction of severity and outcome of the disease.

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HEALTH BEHAVIOURS AND THEIR RELATIONSHIPS WITH JOB DEMANDS AND BURNOUT IN ANAESTHESIA HEALTH WORKERS

Mijakoski D^{1,2}, Stoleski S^{1,2}, Bislimovska D^{1,2}, Kochov P³, Meshkova F³, Markovska Z⁴
¹ Institute of Occupational Health of Republic of North Macedonia, WHO CC, Skopje, R.N. Macedonia

² Faculty of Medicine, "Ss. Cyril and Methodius" University in Skopje, R.N. Macedonia
³ General Hospital, Veles, R.N. Macedonia

⁴ Department of Anesthesiology and Intensive Care, City General Hospital "8th of September", Skopje, R.N. Macedonia

ABSTRACT

The aim of this study was to examine the associations between burnout and health behaviours in a sample of anaesthesia health workers (HWs).

Material and Method

79 anaesthesia HWs (29 physicians, 50 nurses) participated in this cross-sectional study (aged 40.2±10.8 years, 81% females). For the evaluation of health behaviours, the questionnaire constructed for the study of Moustou et al. was used. Job demands and burnout were measured by Hospital Experience Scale and Maslach Burnout Inventory, respectively. A series of multiple regression models were tested to examine the associations of burnout to health behaviours, whereby controlling of age, hospital's and unit's tenure, as well as job demands.

Results

Only 57% of the participants had breakfast every day or almost every day. Anaesthesia HWs consumed fast food on average of 2.47 (SD=2) times a week. Even 63.3% of the respondents didn't exercise at all. Out of 79 respondents, 29 (36.7%) were smokers. Average scores of emotional exhaustion and depersonalization were 25.34±12.95 and 4.7±5.57, respectively. Results showed that emotional exhaustion positively predicted number of cigarettes smoked per day, frequency of using pills in order to relax and painkillers. Additionally, depersonalization positively predicted number of cigarettes smoked per day, frequency of using pills in order to relax and non-pharmaceutical remedies in order to relax/sleep, and number of drink units per time after leaving work and when going out.

Conclusion

Job demands and burnout predicted health behaviours in anaesthesia HWs. Preventive strategy has to be developed in order to improve health and safety of anaesthesia HWs.

Key Words: *anaesthesia, burnout, health behaviours, health workers, job demands.*

Introduction

Job stress usually involves different reactions of the human organism to the detrimental physical or emotional hazards at the workplace. It is important to notice that workplace pressures and job demands are not always hazardous. They are particularly effective when job resources are insufficient and when there is a gap between the job demands and the knowledge, skills and needs of the worker (1,2). Burnout syndrome, characterized mostly by emotional exhaustion and depersonalization, develops as a result of the chronic workplace exposure to physical, emotional, cognitive, organizational, and interpersonal psycho-social hazardous determinants (3,4). Psycho-social workplace factors could be related either to high job demands that require emotional and cognitive efforts in workers, or to reduced job resources which could lead to withdrawal behavior (depersonalization) and disengagement (5,6,7,8,9). The aforementioned relationships are the main elements of the proposed Job Demands-Resources (JD-R) Model of burnout development. However, the actual study puts focus on job demands and burnout and their associations to health behaviors.

Why health behaviors? Burnout has been linked to a variety of organizational (e.g. or enterprise-related or organization-related) and personal (e.g. worker-related) effects. The organization could be affected in terms of increased absenteeism and turnover of workers, reduced effectiveness and quality of work, as well as affected image of the company. Personal effects of burnout could be manifested as health-related problems, mostly recognized as cardiovascular and musculoskeletal problems or psychosomatic discomfort (10,11,12). Emotional changes, such as anxiety and depression, cognitive difficulties in working or learning, and practicing risky health behaviors are well documented in scientific literature on burnout predictors and consequences. Health behaviors are actions taken by the individuals (either risky or protective behaviors) and they could affect individuals' health. Protective behaviors, such as sleeping enough hours per night or regular practicing of exercise, could improve the health of individuals, while risky behaviors, such as smoking, fast food or alcohol consumption could result in disease development. Despite the importance of health behaviors in the etiology of non-communicable diseases, the associations between burnout and health behaviors have been rarely studied in our country (13).

Anesthesia, including intensive care medicine, is characterized by high job demands and workplace pressures. The health workers (HWs) in anesthesia department administer anesthetics to eliminate or reduce pain in patients during surgery or another healthcare procedure, either diagnostic or therapeutic. They also provide special care to critically ill patients and have tasks to prepare the patients before surgical interventions. Anesthesia HWs deal with long working hours, under time-pressure, during rotating and night shifts, sometimes giving care to critically ill patients in high-risk working context leading to high incidence of burnout in this healthcare sector (14,15,16,17).

The aim of this actual study was to examine the associations between burnout and health behaviors in a sample of anesthesia HWs. Scientific data obtained from studies conducted in

HWs have shown that burnout decreases with age and working experience, while it increases with increased job demands. Therefore, age, hospital and unit tenure, as well as job demands, were examined as potential confounders (18,19).

Material and Method

The actual survey was conducted during June-September 2018 within regular preventive medical examinations of anaesthesia HWs. The study instrument together with an invitation letter and information about the study was sent to anaesthesia HWs working in a tertiary-level clinic that is a part of the Faculty of Medicine in Skopje.

A questionnaire constructed for the purposes of the study of Moustou et al. was used for the assessment of both high-risk behaviors (drinking - frequency of drinking, drink - units consumed, smoking - frequency of smokers and number of cigarettes per day, and unhealthy eating - fast food meals per week) and protective health behaviors (exercise - frequency of exercise per week, healthy eating - number of breakfasts per week, number of regular meals per day, and sleeping - hours of sleeping per night) (10).

The Hospital Experience Scale (HES) was constructed and developed for the evaluation of job demands (<http://orcab.web.auth.gr/>). HWs noted the level of agreement with items focusing on physical (seven items, $\alpha=0.71$), organizational (six items, $\alpha=0.73$), emotional (six items, $\alpha=0.72$) and cognitive (five items, $\alpha=0.71$) job demands using a 5-point Likert scale (1=never to 5=always). We calculated mean score for each of the four types of job demands.

Maslach Burnout Inventory (MBI) (20) was used for the assessment of burnout. Emotional exhaustion (nine items, $\alpha=0.91$) and depersonalization (five items, $\alpha=0.76$) were measured on a 7-point Likert scale (0=never to 6=every day). The sum score was calculated for each burnout dimension.

The final sample consisted of 79 anaesthesia HWs (29 physicians and 50 nurses, aged 40.2 ± 10.8 years, 81% females) who have returned filled-in questionnaires. They worked for an average of 200.71 (SD=143.29) months at the same hospital and 168.25 (SD=127.45) months within the same unit. 56 (70.9%) of all respondents were married or lived together with their partner and 71 (89.9%) of them reported full-time contract as a type of employment. They worked for in average of 38.46 hours per week (SD=2.98).

Bivariate analyses were used to evaluate the associations between health behaviours, job demands, and burnout dimensions. Additionally, in order to examine the role of emotional exhaustion and depersonalization, controlling for age, hospital tenure, unit tenure and job demands, a hierarchical multiple regression model was tested for each health behaviour that was shown to be significantly associated to at least one burnout dimension. Age, hospital tenure and unit tenure were entered in the first step, four types of job demands were entered in the second step, while emotional exhaustion or depersonalization was entered in the third step.

Results

Descriptive Data

Only 45 (57%) of the participants had breakfast every day or almost every day. The same frequency of examinees had at least three regular meals in a day. Anaesthesia HWs consumed fast food on average of 2.47 (SD=2.003, range 0-7) times a week. Even 50 (63.3%) of the respondents didn't exercise at all. On average, HWs slept 6.37 (SD=1.4) hours per night. Out of 79 respondents, 29 (36.7%) were smokers. The mean number of cigarettes smoked per day was 4.9 (SD=7.66). Anaesthesia HWs consumed alcohol, regardless of the quantity, on average 1.03 times per week (SD=1.52) and consumed on average 1.11 drink units (SD=1.15) per time. Finally, they consumed on average 0.2 (SD=0.52), 0.18 (SD=0.58), 1.2 (SD=1.29) drink units per time in each of the following occasions: after leaving work, before going to bed at night, and when going out, respectively. Data showed that 16.5%, 13.9%, 16.5%, and 50.6% of all participants, at least once a week, used sleeping pills, pills in order to relax, non-pharmaceutical remedies in order to relax/sleep, and painkillers, respectively.

The average score of emotional exhaustion was 25.34 (SD=12.95), while the average score of depersonalization was 4.7 (SD=5.57). The mean scores of physical, organizational, emotional, and cognitive job demands were 3.99 (SD=0.6, range: 2-5), 3.02 (SD=0.73, range: 1.5-5), 2.32 (SD=0.76, range: 1-5), and 2.75 (SD=0.85, range: 1-5).

Findings of Bivariate Analyses

Bivariate analyses revealed significant associations between emotional exhaustion and:

- number of regular meals per day ($r=-.23, p=0.04$),
- number of cigarettes smoked per day ($r=.31, p=0.006$),
- frequency of exercises per week ($r=-.25, p=0.028$), as well as
- frequency of using pills in order to relax ($r=.34, p=0.003$), non-pharmaceutical remedies in order to relax/sleep ($r=.27, p=0.019$), and painkillers ($r=.35, p=0.00$) per week.

Depersonalization demonstrated significant correlations to:

- number of cigarettes smoked per day ($r=.29, p=0.011$),
- frequency of alcohol consumption (regardless of the quantity) per week ($r=.25, p=0.033$),
- number of drink units per time after leaving work ($r=.31, p=0.006$) and when going out ($r=.37, p=0.001$), as well as
- frequency of using pills in order to relax ($r=.27, p=0.018$) and non-pharmaceutical remedies in order to relax/sleep ($r=.42, p<0.001$) per week.

Findings Obtained by Testing Hierarchical Multiple Regression Models

Table 1 shows the standardized beta coefficients for the independent predictors of certain health behaviours.

Table 1. Standardized beta coefficients for the independent predictors of health behaviours

	Number of regular meals per day	Number of cigarettes per day	Frequency of exercise per week	Pills in order to relax	Non-pharmaceutical remedies in order to relax/sleep	Painkillers	Drink units after leaving work	Drink units when going out
Emotional exhaustion	-.075	.288*	-.24	.355*	-.174	.254*	-.31*	-.376**
Depersonalization	-.592	-.394	-.377	-.332	.184	.242	-.145	-.341
Age	-.661*	.729	.762*	.214	.193	.3	.856**	.68
Hospital tenure	mc	-.221	-.183	-.3	-.274	.609*	.861**	.582*
Unit tenure	mc	-.275*	-.008	.047	.091	.107	.155	.092
Physical JDs	-.02	.275	.289	-.124	.026	.046	-.018	.039
Organizational JDs	.005	-.111	-.056	.179	-.012	.043	.003	-.143
Emotional JDs	.041	-.312	-.381	.251	-.147	-.191	.076	.018
Cognitive JDs	.196	.242	.256	.106	.179	.177	.365	.228
R ² for the Model	.004	.054*	.1068*	.037	.08*	.078*	.052*	.072*
ΔR ² for Step 3								

* $p<0.05$, ** $p<0.01$

mc - removed due to possible multicollinearity (standardized beta above 1)

The results showed that emotional exhaustion positively predicted number of cigarettes smoked per day ($\beta=.288, p<0.05$) (R^2 for the model=.242), frequency of using pills in order to relax ($\beta=.355, p<0.05$) (R^2 for the model=.179), and frequency of using painkillers ($\beta=.254, p<0.05$) (R^2 for the model=.353). The frequency of using painkillers was also predicted by hospital ($\beta=.856, p<0.05$) and unit ($\beta=.861, p<0.01$) tenure.

Additionally, results demonstrated that depersonalization positively predicted number of cigarettes smoked per day ($\beta=.304, p<0.05$) (R^2 for the model=.256), frequency of using pills in order to relax ($\beta=.322, p<0.05$) (R^2 for the model=.177), frequency of using non-pharmaceutical remedies in order to relax/sleep ($\beta=.478, p<0.01$) (R^2 for the model=.365), and number of drink units per time after leaving work ($\beta=.31, p<0.05$) (R^2 for the model=.228) and when going out ($\beta=.376, p<0.01$) (R^2 for the model=.285). The number of cigarettes smoked per day was also predicted by hospital tenure ($\beta=.762, p<0.05$), the frequency of using non-pharmaceutical remedies in order to relax/sleep by hospital ($\beta=.881, p<0.05$) and unit ($\beta=.609, p<0.05$) tenure, while the number of drink units per time after leaving work was positively predicted by unit tenure ($\beta=.582, p<0.05$). Apart from burnout dimensions, the number of regular meals per day was negatively predicted by hospital tenure ($\beta=-.661, p<0.05$) and physical job demands ($\beta=-.275, p<0.05$) (R^2 for the model=.196).

Discussion

Data obtained from this study showed high emotional exhaustion (average 25.3) and depersonalisation (average 4.7) scores which is comparable to previous studies conducted in HWs (21). However, our previous studies in hospital HWs demonstrated lower burnout levels (22). To our knowledge, compensatory efforts that are effective in the early stages of burnout development

and which are stemming from high job demands were less effective in this group of workers (23). Those psychological processes are developed in each individual with a purpose of increasing the level of the performance. Another goal of the compensatory efforts is to reduce the associated psychological costs in workers and to prevent the individuals from depersonalisation.

Job resources according to the JD-R Model are important hospital protective factors, but they've also been presented as less effective in the HWs from the actual survey. Our previous study in HWs working in a general hospital demonstrated that the mean values of emotional exhaustion and depersonalization were significantly higher when the follow-up was conducted three years later from the baseline survey (24). It was concluded that high job demands (namely, job demands were also significantly increased between baseline and follow-up evaluation), consume workers' mental and physical resources, resulting in emotional exhaustion (25).

In the actual study, it was found that anaesthesia HWs mostly followed sedentary lifestyle and even 63.3% didn't exercise at all. These data showed that HWs didn't practise the recommended regular physical activities (26). They also experienced unhealthy diet showing that fast food was consumed on average 2.47 times per week (27). Additionally, only 57% of the participants had breakfast every day or almost every day and only 57% of them had at least three regular meals in a day. Cigarette smoking seemed to be frequent (36.7% HWs were smokers). While alcohol consumption was infrequent, participants frequently used pills and painkillers.

These findings demonstrate the potential risk for anaesthesia HWs' health and well-being due to their unhealthy lifestyle (e.g. physical inactivity, fast food consumption, smoking and frequent use of pills and painkillers) (26,27). The inappropriate use of painkillers increases the risk of other disease, damages, and interactions with other drugs (28,29,30).

The actual study demonstrated that emotional exhaustion was related to increased quantity of smoking and increased frequency of using pills and painkillers. Quantity of smoking was also positively predicted by depersonalization. Depersonalization itself was related to increased frequency of using pills and non-pharmaceutical remedies, and increased quantity of drinking after leaving work and when going out. The more that anaesthesia HWs experienced job burnout, the more they tended to smoke, to use pills and to drink socially. Additionally, less frequent regular meals per day were predicted by physical job demands. The more that participants felt that there was excessive workload at the hospital, the more that they felt time pressures or lack of staff and supplies, the more they tended to have irregularly meals per day.

The relationships of health behaviours with burnout and job demands have been detected in other studies conducted in HWs' (28). Associations between burnout and smoking were shown in the nursing staff in intensive care units and mental health professionals (31,32). Burnout predicted more frequent painkiller use in human service workers, including HWs (33). Burnout was also related to increased alcohol consumption in dentists, emergency physicians, surgeons and ambulance workers (10, 34-37). Finally, working more than 40 hours per week was associated to time-related barriers to healthy eating in young adult men (38).

The relationships of health behaviours with job demands and burnout are part of the pathological process that affects workers' health. Job demands exhaust employees' psychological and physical resources and lead to health problems via burnout. The findings of the actual study are in line with the theoretical and empirical data concerning the existence of an energetic process involving job demands - burnout - poor health (38,39). Within this process, high risk behaviours are one of the potential mechanisms that link burnout with poor health (40).

However, this study was cross-sectional with a reduced capacity to make causal conclusions. Besides that, we included several confounding factors (age, tenure, job demands), it is possible that some were missed in the models. Particular response bias is also possible, because HWs with high levels of burnout tend to have reduced motivation for participation in surveys of this type. Also, a "healthy worker effect" may have under-estimated the levels of burnout in the total sample.

Conclusion

Job demands and burnout predicted several health behaviours in anaesthesia HWs. These associations remained significant after inclusion of some confounding factors. Moreover, the study of risk behaviours in HWs is important because the health behaviours can have a negative impact on health and wellbeing and also in the context of HWs' roles as healthcare providers. Risk health behaviours are known factors that could contribute to medical errors and inadequate patient safety. Therefore, they could be erosive for occupational performance, wellbeing at work and quality of care provided to the patients.

As a conclusion, a preventive strategy has to be developed in order to improve health and safety of anaesthesia HWs. Occupational health services have to be focussed on early detection of burnout in HWs, as well as development and implementation of specific action research interventions in hospital settings. The action research process should take into account the findings that job demand and burnout predicted unhealthy behaviours in anaesthesia HWs. Those interventions together with appropriate management of job demands could effectively improve the health of HWs, as well as to improve quality of patients' care.

Author Contributions

DM and PK gave the idea and created the design of the study. DB, IM, and ZM were involved in the data collection. DM and SS performed the statistical data analysis. All authors equally contributed to the writing of the manuscript.

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