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EXAMINATION OF HEALTH CARE PROFESSIONALS' GENERAL PHYSICAL AND MENTAL HEALTH WITH QUESTIONNAIRE METHOD

Theses of Doctoral Dissertation

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Introduction

In the past few decades, attention has increasingly been focused on mental health and psychological health protection. This requires a complex, multi-directional interdisciplinary approach, which can be placed primarily somewhere in the meeting point of psychology, medicine, behavioural sciences and labour sciences (management-organization, human resources management and work arrangement). None of the sciences mentioned can assess the complete health condition on its own or provide recommendations for a possible solution, because they are mutually dependent on each other's methodological and conceptual approaches.

Work takes place within the organization while the jobs deriving from the interrelated scope of activities are being implemented. There is a back and forth effect during the process, that is the employee influences the organization in the process of value creation while the organization ensures the work conditions via the job system, the established organizational structure and corporate culture, whereby it determinates the work conditions and expectations.

In the current case, we examine what effect the work conditions in Hungarian health care institutions have on individuals, which greatly influences the quantitative and qualitative aspects of the health care professionals available as human resources. There are labour shortages of nurses and doctors, in addition, their health (and the work conditions that have the strongest influence on their health) is not really in the focus of attention. Although people working as helping professionals are more severely exposed to harmful physical and mental stressors, which deteriorates their health status, and the occurrence of psychosomatic symptoms is more frequent among them. An almost direct consequence of the negative effects, work conditions and workload is migration from the health care system, which has been a serious human resource problem in the field of health care for many years.

Objectives

The health condition of medical doctors, nurses and other professionals working in the health care system deteriorates in accordance with the number of years spent working, which may also influence the quality of their work. *Therefore, the health promotion of health care workers can be considered as a workplace prevention program, but also as a measure to improve the quality of the health care.*

The aim of our research was to assess the extent of the workload resulting from jobs, work environment and work arrangement (a work schedule of two- or three-shift systems), which has impact on the life quality of people working in the health care system, with special focus on the levels of depression, the impact of health status on the quality of life and work, stress levels, aggression levels and physical activity levels.

Our assumption is that these phenomena are largely responsible for the development of working conditions of those working in the health care system and their intensification contributes to the process of physical and mental workload of people working in health care, which can greatly promote the development of an unsatisfactory physique, which over time can be combined with depression and then a state of stress, and can even mean the possibility and occurrence of burnout. This ultimately results in increased turnover, labour shortages and deteriorating health care services at the level of health care institutions. This is one of the main reasons why it is necessary that the process of fact finding is implemented with academic tools, which can serve as a foundation for a comprehensive development strategy based on measured data, which can manage these processes.

A fundamental goal of the paper as a complex work is that it not only explores the theoretical background (the concept and significance of stress, including its occurrence in the world of work, the importance of depression and burn-out, aggression, the importance of physical activity, the effect of stress situations occurring in the health care system on the quality of life and the field of occupational health promotion) but it also presents some of the important findings of previous research projects related to the research of the author and, in the frame of a survey based on questionnaire method, it provides comprehensive understanding of the qualitative features that influence the quality of life of health care workers and affect their ability to work.

Research material and method

After the ethical approval was granted, the sampling, which was a questionnaire survey, was conducted at two large locations. We visited the departments of the Medical School of Pécs and distributed the questionnaires in the following institutions: Department of Vascular Surgery, Department of Neurosurgery, 2nd Department of Internal Medicine, Department of Neurology, Department of Psychiatry and Psychotherapy, Department of Cardiology, Department of Traumatology and Hand Surgery, Department of Dermatology, Venereology and

Dermatooncology, Department of Rheumatology and Immunology and Department of Ophthalmology.

The other main location meant the national further training courses for professional groups organized by the Faculty of Health Sciences of the University of Pécs, where we distributed questionnaires to the participants.

Respondents received the questionnaires printed on paper including the purpose of the research, its technical conduct and the contact information of the person who was responsible for the completion of the questionnaires and provided assistance.

The majority of the respondents were women with 435 persons (92.36%) and 37 men (7.86%), answered our questions, so the sample *comprised a total of 472 persons*.

Respondents answered anonymously a set of questions consisting of five main sections. At the beginning of the questionnaire there was a section collecting *demographic data* (respondents' sex, age, height, weight, type of residence, qualifications, smoking habits, shift schedule and job) and there was also a section, which provided information about the content and goal of the research and the technical conditions of the completion of the questionnaire.

The following 5 questionnaires were included in the survey:

- Perceived Stress Questionnaire
- Beck Depression Questionnaire
- Buss-Perry Aggression Questionnaire (BPAQ)
- International Physical Activity Survey Questionnaire (IPAQ)
- SF-36 (Questionnaire on health status)

The findings were assessed, and not only the responses to the questionnaires were presented, but there were *correlation analyses* as well, which contributed greatly to the conclusion of new research results.

Statistical methods applied

The results of the questionnaires were recorded in Office 365 Excel tables. SPSS 22.0 was used for the statistical analysis. The descriptive statistical results are presented in the following forms: mean±standard deviation and sample size, frequency (%) and median (IQR). In accordance with the results of the normality test (Kolmogorov Smirnov test), we applied one-sample t-test, Wilcoxon or Mann-Whitney U and Kruskal-Wallis test and Spearman correlation

analysis when we analyzed the data statistically. The results below $p<0.05$ were considered significant.

Ethical approval

After reading the information text and the declaration of approval, participants were able to decide whether to take part in the research and give their consent to the use of their responses for research purposes. Participation in the research was anonymous and voluntary. During the questionnaire survey, the interviewers signed a declaration confirming that they were working in accordance with research ethics principles and that the data were kept confidential. At its meetingon 03 February 2017, the Regional and Institutional Research Ethics Committee of the PTE Clinical Center authorized the implementation of the research in accordance with the clinical protocol, the reference number is 6537.

Results

One of the main results of the survey, supported by statistical and measured data, is that the physical and mental state of the target group examined is below the national average. This phenomenon is based on professional practice, workload and work conditions involving physical and mental risks. The mean BMI of the special population studied was 25.45 (±4.8). Of the women surveyed, 52.52% fell into normal or underweight (2.10%) categories, 31.94% were overweight and 15.54% were obese. Considering men, 31.03% had normal BMI, 55.18% were overweight and 13.79% were obese.

The responses about the health status in the SF-36 questionnaire resulted in the lowest scores for both sexes in the vitality and general health perception categories. The significant deviation between the reference values and health care workers' values revealed that women deviated from men in all categories studied except social activity. Among men, significant deviation ($p<0.05$) in physical activity and vitality was found. The perceived or real poor health status contributes significantly to the development of lower physical activity, lower tolerance to physical pain and lower pain threshold among the examined women working in health care. 55% of the Hungarian women surveyed by ELEF did not report pain, compared with only 38.16% in our research. Men produced more positive results in all categories. This is probably due to the small sample number and younger average age. This can lead to an important conclusion: several occurrences of some kind of pain are mostly experienced by people who

work in jobs where proper physical strength would be necessary for the everyday nursing and moving of patients.

30% of Hungarian women struggle with depression, compared with 39.41% among health professionals. Our research did not include people over the age of 74, among whom, according to the ELEF survey, a tenth are severely depressed, so our result paints an even poorer picture of the mental health of health workers. BDI values tend to be higher as age progresses, but this was not true in our research, with the younger generation showing more depressiveness (Table1).

Table 1: Age depression scores and standard deviation

Age	BDI average (standard deviation)
18-24 years (n=6)	8.33 (3.88)
25-34 years (n=64)	7.71 (6.90)
35-54 years (n=342)	8.20 (6.73)
above 55 years (n=61)	7.35 (5.37)

Source: edited by the author

When we looked at the 9 components of the depressive syndrome, we found that health professionals had the highest rates of fatigue (68.22%) and sleep disturbance (60.80%) self-reproach (45.76%).

The overall aggression score of health professionals is higher than that of Gerevich et al. (2012). The most characteristic manifestation of aggression in healthcare professionals is hostility, followed by the expression of anger, fury, then physical and finally verbal aggression.

74.59% of those surveyed received a high physical activity rating, 21.18% had a moderate activity, and only 4.24% fell among people with low physical activity. At the same time, the results show that *most movements are carried out by health professionals in their work*, with little or hardly any activity in leisure time or from round-the-house work (Table 2).

Table 2: Physical activity in 4 areas (workplace, transport, home activity, leisure) in MET/min/week, by sex

	Workplace (IQR)	Transport (IQR)	Activities around the house (IQR)	Leisure time (IQR)	Total (IQR)
man (n=37)	1260.00 (382.50-3780.00)	130.00 (72.50-420.00)	480.00 (135.00-1125.00)	240.00 (67.50-465.00)	3130.00 (1162.50-5407.50)
woman (n=435)	960.00 (50.00-2640.00)	150.00 (60.00-360.00)	300.00 (60.00-720.00)	180.00 (30.00-360.00)	2100.00 (810.00-4050.00)
total (n=472)	960.00 (60.00-2700.00),	150.00 (60.00-360.00)	300.00 (60.00-720.00)	180.00 (30.00-405.00).	2130.00 (840.00-4080.00)
p	0.128	0.877	0.080	0.338	0.056

Source: edited by the author

It may be important for our research to establish that, for the target group studied, especially due to their specific working conditions, which are more difficult than average, physical activity during working hours is not worth much in terms of quality of life if it is not accompanied by sufficient and mainly quality exercise in leisure time. Activity at work is very high for health professionals, in our research this showed extremely high MET/min/week values, but the correlation study only showed significant results with BMI values for leisure activities. Managing physical and mental risks at work only becomes effective when accompanied by exercise in leisure time.

In the correlation studies, based on age, we found a significant but weak negative correlation for PSS points, physical activity (SF-36) and physical role limitation (SF-36). In all cases it is $p<0.05$. This means that with age, physical activity deteriorates and physical role limitation increases, and the possibility of developing stress increases.

The correlation with body mass index (BMI) was found in terms of stress scores and physical health. In each case, it is significant ($p<0.05$), but only a weak relationship was found. As the

BMI increases, the stress score increases and the physical activity, physical role limitation, physical pain and general health score decrease, which in every case results in a deterioration in the perception of an individual's health. More than half (54.62%) of the health professionals we examined struggle with overweight, which may also be a risk factor in terms of stress. At the same time, the results also point out that *as stress levels increase, the willingness to act aggressively also increases.*

When comparing with the SF-36 questionnaire, we found a significant ($p<0.001$) relationship with all subscales, demonstrating that higher stress levels in an individual's life have a negative impact on their mental and physical state. The closest relationship is with mental health ($R=-0.715$) and vitality ($R=-0.666$).

When examining the relationship between IPAQ results, we received significant results in many places. *For health workers, the more physical activity an individual does in the workplace, the higher the depression score will be.* In other words, the negative effects on the individual can clearly be linked to the activities involved in meeting job requirements. At the same time, the score of aggression was only related to an increase in physical activity in the workplace. In the subcategories, verbal aggression and hostility can be seen to show a significant link.

One of our most surprising results is that we found no link between recreational physical activity and body mass index among the assessed health workers.

Discussion

The health system as a social subsystem has important functions. The efficient functioning of the subsystem is largely affected by the quality of life of the workforce employed in it and by the totality of the negative and positive effects that influence it.

Our research examined the quality of life of health professionals in a complex way using questionnaires on a 472-person sample.

The totality of the working conditions and lifestyle characteristics of the examined target group results in *their physical and mental state falling short of the national average.* Professional practice, job loads and working conditions involving physical and mental risks play a significant role in this phenomenon.

Based on their work and studies, health professionals are aware of the components of a healthy lifestyle and the consequences of unhealthy behaviour and physical inactivity, yet we found a

higher percentage of obese people among them than in the case of the entire Hungarian population.

For the characteristics of health status, the lowest score for both sexes was received in the categories of vitality and overall health perception.

The perceived or real poor health status plays an essential role in the evolution of lower physical activity, lower tolerance to physical pain and a lower pain threshold among the studied women working in health care. This is also shown in the higher than average physical role limitations, within which we found much higher rates than the overall population in the very mild, mild and moderate pain categories. For men, there were much more positive results everywhere.

30% of Hungarian women have depression, compared with 39.41% among health care professionals, meaning our result *reveals poor condition of the mental health of health workers.* It should be noted that BDI values tend to be higher as age progresses, but this was not true in our research, we found decreasing results.

The examination of the 9 items of depression found that health workers' scores in all segments were *higher* than the national average. The highest scores were for feeling of tiredness, sleep disorder and self-reproach. At the same time, the stress score of the target group studied was lower, which may explain the increased ability of health professionals to improve their coping mechanism during their training.

Dividing the examined target group by occupation can reveal that the workplace stress level of nurses is particularly high compared to other occupational groups. Our study showed a decrease in stress scores as the age progresses, similarly to depression. The two symptoms strengthen each other, or the decrease in one of the symptoms has a positive effect on the other one, which is also confirmed by the high correlation between the characteristics of the two symptoms ($R=0.61$; $p<0.001$).

The most characteristic manifestation of aggression among healthcare professionals is hostility, followed by the expression of fury, anger, then physical and finally verbal aggression. For subscales, the largest difference was in the hostility category, which was significant ($p<0.001$). In terms of gender differences, men showed more favourable results than women.

For the results of the physical activity assessment, it is notable that the highest value was due to movement at work and that movement in leisure time is far below this value. However, *physical activity only during working hours is not worth much in terms of quality of life if it is*

not accompanied by adequate and mainly quality exercise in leisure time. Activity at work is very high for healthcare workers, but the correlation study only showed significant results with BMI for leisure activities. Managing physical and mental risks at work only becomes effective when accompanied by exercise in leisure time. At the same time, 67.09% of those surveyed do not do enough exercise in their spare time. As regards sitting, the number of skilled workers spend much less time sitting than the Hungarian average.

In terms of physical activity at work and activity at home, those with lower qualifications showed values almost twice as high as those with higher qualifications. At the same time, it should be noted that the leisure time activity of tertiary graduates is higher level activity than that of respondents with secondary education, and this is most likely due to life management needs and a higher proportion of discretionary goods that can be spent.

When we studied the correlations, we found a significant but weak negative relationship based on age for PSS points, physical activity (SF-36) and physical role limitation (SF-36). It was in all cases $p<0.05$. This means that physical activity deteriorates as age progresses, physical role limitation increases, and the possibility of developing stress increases.

As BMI increases, the stress score rises and the scores of physical activity, physical role limitation, physical pain and general health perception decrease, which results in a deterioration in the perception of the individual's own health in every case.

New scientific results

The first step in improving the quality of life of health professionals is to identify which factors are primarily responsible for the development of a group of depressive and vitality-reducing symptoms in the occupational group and what characteristics the target group members have. Thus, research has an important role to play in contributing to the development of the right methods, solutions and strategies.

- In the present case, a complex research result has been presented, the sample of which (472 persons) is significant in the light of previous surveys. The research of Henriett Hirdi et al. was the first comprehensive national survey of the health status, lifestyle and health conduct of health professionals employed in occupational health services (HIV), involving 335 persons, and the data were produced by using unvalidated questionnaires.
- The complexity of the results is that in addition to socio-demographic data, the results of 5 validated questionnaires or questionnaires in the ongoing validation process were used (Perceived Stress Questionnaire, Beck Depression Questionnaire, Buss-Perry Aggression Questionnaire, IPAQ and SF-36). The results of the questionnaires were processed and presented, and correlation analyses were also implemented.
- One of the main results of the survey, supported by statistical and measured data, is that the physical and mental state of the analyzed target group is below the national average. It is the professional practice, job workloads and work conditions involving physical and mental risks that are behind this phenomenon.
- Studies on physical pain and role limitation in the target group have shown that mostly people working in jobs where it would be important to have the right physical strength to care for and move patients every day experience several occurrences of some kind of pain.
- The depression study has revealed that the mental health of health workers is in a worse state than the national average, but it has been shown that as long as BDI values in the average population tend to be higher as age progresses, this is not observed among healthcare professionals, the older age group produced more favourable data than young people.
- It has been revealed that health professionals do most movement in their work compared to the little activity in their free time or from the work around the house. However, for the studied target group, mainly due to their specific and more difficult than average working conditions, physical activity during working hours only is not worth much in

terms of quality of life if it is not accompanied by sufficient and mainly quality exercise in their leisure time. Although activity at work showed extremely high MET/minute/week values, the correlation study only showed significant results with BMI values for leisure activities, i.e. the management of physical and mental risks during work only becomes effective if accompanied by exercise in their leisure time. This phenomenon is also shown by a correlation study between physical activity and depression scores; in the case of health workers, the more physical activity an individual performs at work, the higher the score of depression. In other words, the negative effects on the individual can clearly be linked to the activities involved in meeting job requirements.

- Stress scores are inversely proportional to the amount of physical activity in leisure time, but for other sub-categories (work, home and transport activity), more movement is not considered to be a stress reduction mechanism. As a result of correlation studies, we see that recreational activity is positive, but activity at work has a negative impact on a person's physical health.
- High activity scores at work result in poorer health, but recreational physical activity has a positive impact on both physical and mental health. However, the measured data showed that the greater part of health professionals do not move enough in their spare time, partly owing to their high physical activity at work and little (sometimes poorly allocated, e.g. because of shifts) leisure time.
- The results of the research show the quality of life characteristics of health professionals in a nuanced way, making the workplace impact and conditions they are exposed to more transparent, and by becoming aware of these phenomena, the content of the development and counselling programs to address these issues has been developed.

Proposals

Healthcare institutions never or hardly ever provide health promotion and prevention activities for their own workers. In the light of the results of the research, we consider health promotion, including physical activity, as one of the most important preventing activities for health professionals, to be particularly important, because regular physical activity not only makes them fitter and more resistant to diseases, but can also set an example for the environment and patients.

If we want to make proposals to address stress levels, quality of life poorer than the average and the negative phenomena it causes (burnout, migration, deterioration of self-image and health status, career path breaks, loss of human resources impacting workplaces, total social loss, etc.) among health professionals, they could be grouped around the following topics:

- provision of support services to health workers,
- improving the practice of health promotion at work,
- development of psychological resources; development of individual competences necessary for the management of coping strategies, more effective career guidance and preparation in the process of vocational training.

It is relatively easy to understand that most of these areas require government involvement, the elaboration of development strategies that embrace the health system as a whole and a significant amount of budgetary resources. At the same time, without these development processes, the management of the problem areas examined and most of the negative phenomena resulting from the organization will not decrease, and even their increase and further organizational tension can be expected.

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