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Health and health influencing factors among staff and students of University of Szeged

Summary of PhD Thesis

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Introduction

Educational institutions transmit a set of values to their students, and the health behavior and attitudes of those working there can be a determining factor for the next generation in relation to healthy lifestyles.

In higher education institutions, shaping the health consciousness of students is important because they will be the new generation of intellectuals who will pass on the knowledge that will help shape the health consciousness of future generations in a positive direction. It is essential that the working conditions in training institutions are such that they strive to create the right healthy situation or an aspired one; this means, in part, a learning pattern from a practical point of view.

Since the Ottawa Charter for Health Promotion (1986) has been issued it is well known that „Health is created and lived by people within the settings of their everyday life; where they learn, work, play and love." The notion of settings evoked the idea of taking the sole responsibility for health off the individual and examine those places and contexts as well where people live their lives. The Health Promotion Glossary (1998) defines the settings for health as „The place or social context in which people engage in daily activities in which environmental, organizational and personal factors interact to affect health and well-being." Accordingly, if health promotion wants to be effective, it should focus on the settings of daily activities, like home, workplace, community spheres etc.

A university can also be a setting for workplace health promotion. A university is a complex system, not only in terms of size (student and staff numbers) and operation, but also because of the heterogeneity of staff in terms of skills and activities. University as an important place of teaching, learning and research needs healthy, satisfied and motivated employees to be able to provide high quality services for the society. Satisfaction and motivation are prerequisites of feeling healthy. Feeling of satisfaction is influenced positively or negatively by organisational climate factors, co-worker relationships, working conditions, organisational commitment and leadership, and management.

A review paper published in 2015 has identified 37 PubMed and Medline research articles published since 2000 that confirm the association between psychosocial risk factors and cardiovascular and cancer morbidity and mortality in Europe. These factors included high job demands, low job autonomy, low control, high effort-reward imbalance, interpersonal conflicts, low social support, and low trust. The results of Hungarostudy 2013 indicated a rise in workplace insecurity (women 23.6%, men 16.7%) compared to the results from the 2006 survey, as well as low collegial support among employees. Just over one third (33.6%) of employees over 50 were extremely overworked, and the number of those with low workplace control had doubled in six years. The extent of effort-reward imbalance among those with a higher education degree was multiplied by 1.5. As a result of all these

workplace characteristics, the chance of depression emerging among employees has increased.

National and international research results underline that workplace stress causes mental and somatic problems.

The physical office work environment affects employee well-being, performance, and satisfaction with the organisational culture.

Workplaces and employees' health are closely connected. A healthy workforce would increase productivity, effectivity and efficiency which will benefit the employer in financial and moral terms as well. On the contrary, if employees experience stress, long working hours, bad managerial style, not safe working conditions, that would lead to ill physical and mental health and poor lifestyle habits like lack of exercises, smoking, drinking and inadequate diets.

The health behaviour and attitudes of medical students are particularly important because they serve as an example to the general population and patients. The results of a study of health science students show that their lifestyle needs change and that the increase in knowledge does not lead to an improvement in their health behaviour, so they are less able to have an indirect positive impact on the people they care for and on these people's lifestyle.

It is also essential that the future intelligentsia live according to their knowledge at the age when they are students, and do not have any harmful habits, such as alcohol, drugs or smoking. Students in higher education who regularly smoke, consume more alcohol or drugs are more likely to be absent from classes, fail one or more exams, increasing the likelihood of dropping out.

University as a workplace has all the prerequisites that can be utilized to become an effective intervention site: peer networks, time spent together with fellow workers, supporting academic environment, high level of education, knowledge and motivation. It is worth studying how a workplace like this affects its employees' health and health behaviour.

As an educational setting, higher education has the social commitment of creating a sense of responsibility towards health, a capacity to act and a health-conscious behaviour among students.

By emphasising health promotion in their approach and practice, higher education institutions can contribute not only to protecting, maintaining or improving the health of their staff and students, but also to protecting the health of the wider community, the population. A university or college becomes a prominent setting for health promotion if its mission statement includes health-promoting values and principles.

Aims

The main aim of the study was to survey the health influencing factors focusing on health behaviour and working envirenment among university staff (Study 1) and students (Study 2) in order to support the development of the health promoting program of the University of Szeged.

To complete the main aim, the followings were in the focus of Study 1 among the employees of the University of Szeged:

- to analyse the health promoting and damaging behaviour including nutrition, smoking, alcohol consumption, physical activity, leisure time activity;
- to characterize their participation in screening programs;
- to analyse the association between the satisfaction with their own fitness, health and looks with the importance of health and with their self-categorised health status;
- to explore the working conditions of the staff of the University;
- to define exposure to workplace-related risk factors, with special focus on the psychosocial factors and their interconnections with
    - workplace conditions;
    - relationships with superiors and colleagues;
    - moral, professional and financial appreciation.

To complete the main aim, the followings were in the focus of Study 2 among the students of the University of Szeged:

- to analyse the health promoting and damaging behaviour including nutrition, smoking, alcohol consumption, physical activity;
- to measure the students' ideas about their own possibilities in the promotion and prevention of their own health;
- to characterize their attitude toward vaccination as an important tool of prevention; the increasing level of vaccine hesitancy during COVID-19-pandemic called the attention for the role healthcare staff, including medical students as future physcians in the motivation of people to be vaccinated against infectious diseases.

Materials and methods

Study of university staff (Study 1)

A cross-sectional study was carried out at the University of Szeged, Hungary, which is the biggest service provider of the Southern Great Plains Region. An online self-administered questionnaire was completed by staff at healthcare-oriented faculties (Faculty of Medicine, Faculty of Pharmacy, Faculty of Dentistry, Faculty of Health Sciences and Social Studies) and non-healthcare-oriented faculties (Faculty of Law and Political Sciences, Faculty of Humanities and Social Sciences, Faculty of Economics and Business Administration, Faculty of Engineering, Juhász Gyula Faculty of Education, Faculty of Agriculture, Faculty of Science and Informatics, and the Bartók Béla Faculty of Arts) at the University of Szeged. Those categorised as healthcare-oriented faculties performed healthcare-related activities, with curricula related to healthcare, while there was no such orientation in the other group of faculties. A short description of the study and a link to the online questionnaire were sent to the teaching and non-teaching university staff. The questionnaire was completed by 261 employees (10% of the target population).

The Regional and Institutional Human Medical Biological Research Ethics Committee of the Albert Szent-Györgyi Clinical Centre, University of Szeged approved the study protocol (No. 175/2012). Participation at the research was voluntary and anonymous.

The questionnaire asked for basic socio-demographic data (sex, age, marital status, level of education), characteristics of the employees' working conditions and work activities, employees' lifestyle, such as nutritional habits (food frequency), physical activity (exercise and sport), leisure time habits, smoking and alcohol consumption, and visiting the doctor. Based on the reported level of education, the data were classified into secondary and tertiary education categories. The secondary education category covers the levels of vocational education, vocational secondary and technical education, and academic seondary education. Tertiary education was defined as higher vocational education, college (BSc), university (MSc) level studies. From the point of health status, self-reported health and chronic diseases were asked. The questionnaire was based on the Hungarian version of the European Health Interview Survey 2009. The following working condition characteristics were included: risk of infection, effects of heat, radiation, noise, etc., and psychosocial factors such as strict deadlines, frequent overwork, the difficulty in meeting requirements, intensity of work, communication problems, violent behaviour of colleagues, discrimination, bullying, independent decision-making, the possibility of using one's own knowledge and skills, a post requiring many autonomous ideas and inventiveness, and the possibility of job promotion.

10-points Likert scales were used to measure the extent of physical and mental stress at work (1=not stressful; 10=very stressful), the working atmosphere (1=very

bad, 10=very good), and the extent of satisfaction with actions to preserve and promote employees' health (1=not satisfied at all, 10=completely satisfied).

The promotion and protection of the employees' own health was measured on a 10-points Likert scale, too (where 10 meant 'very important').

Statistical analysis was performed using IBM SPSS 22.0 and 26.0 versions.

Descriptive and analytical statistics were applied (frequencies, means±SD, cross tabulation analysis with chi-square test, one-way ANOVA, Spearman and Pearson correlations, t-test).

A principal component analysis was applied to the 19 work environment factors in order to determine whether it was possible to characterise the work conditions of university staff with fewer variables. The principal components were further analysed by sex, as well as in terms of relationship with colleagues and superiors, and financial, moral and professional appreciation. As the principal components did not show a normal distribution in all cases according to the Kolmogorov-Smirnov test, we applied the Mann-Whitney U and the Kruskal-Wallis tests, with the Bonferroni correction for multiple tests for the latter in the case of a pairwise comparison.

In all analyses the results were considered to be significant at $p<0.05$.

Study of university students (Study 2)

The cross-sectional study was conducted among first and fourth year medical students of the University. The data was collected using an online questionnaire, and the link to the questionnaire was sent to the students electronically [official university course forum message (CooSpace) or by entering a QR code].

The Regional and Institutional Human Medical Biological Research Ethics Committee of the Albert Szent-Györgyi Clinical Centre, University of Szeged approved the study protocol (No. 5018). Participation at the research was voluntary and anonymous.

The questionnaire examined sociodemographic characteristics (age, sex), lifestyle related factors (nutritional habits – fruit and vegetable consumption, smoking, alcohol consumption, physical activity) and students' vaccination related knowledge and attitude. The lifestyle related questions were based on the Hungarian version of the European Health Interview Survey 2019. From the point of the vaccination, we examined the administration of influenza and COVID-19 vaccinations among students, the self-assessment of knowledge about vaccinations, the importance of vaccinations, and student opinions about recommended vaccinations.

Vaccine hesitancy or acceptance was defined using the WHO SAGE Working Group on Vaccine Hesitancy definition (vaccine hesitancy is a "delay in acceptance or refusal of vaccines despite availability of vaccination services). We looked at the responses to the question "Have you received the COVID-19 vaccine as a student?"

to see who had requested vaccination before it became mandatory (vaccine acceptance) and who had not been vaccinated until after it became mandatory or even then (vaccine hesitancy).

Given that many vaccinations are mandatory in Hungary, vaccination attitudes towards recommended vaccinations were investigated using questions from a pilot study among students of the Juhász Gyula Faculty of Pedagogical Education at the University of Szeged. Students rated 18 statements on a scale up to 1–4 (e.g. "If my general practitioner recommends a vaccination, I will administer the vaccine") on the extent to which the statement is typical for them (1=not typical at all; 4=very typical). For the analyses, the responses from 1–2 (hereafter "not typical") and 3–4 (hereafter "typical") were merged.

Data were analysed using IBM SPSS 28.0.

Data were evaluated by descriptive and analytical statistical methods according to sex and academic year group. Groups were compared using percentage distributions and chi-square test. Multivariable logistic regression analyses were applied to reveal the associations between vaccination related attitude and vaccine hesitancy or acceptance adjusted for sex and academic year group.

In all analyses the results were considered to be significant at $p<0.05$.

Results

Study of university staff (Study 1)

The research sample comprised 261 university employees, from 11 faculties out of the 12 ones at the University of Szeged. Women accounted for 67% of the complete sample, and the mean age was 43.4 years. 47.9% of the answerers had a college or university degree, 40.6% had a PhD, and 5 people (1.9%) were doctors of Academy.

It is preferential that most of the employees ate at least three times a day. The ideal frequency of eating five times a day was very rare.

Apart from eating frequency the content of meals is also important. When studying the frequency of eating food with carbohydrate content we found that the answerers preferred white bread, though brown bread was also present in their nutrition at least couple of times a week. It is unfortunate that only a trifling proportion of the staff members ate raw vegetables (11.1%) and raw fruits (18.9%) several times a day. Respondents preferred lean pork meat and skinless chicken meat to more greasy kinds of meat, and light cold meat to their fattier versions. Respondents cooked primarily with sunflower oil (63%), 22.7% used olive- or canola oil. More than the half of respondents (61.8%) used salt only when cooking, while 32.7% preferred less salty or unsalted food, meal.

It is a positive result that drinking tap water and mineral water several times a day or daily was the most preferred way of hydration.

It should be highlighted, that 13.9% of the complete sample was still smoking.

13.9% of the complete sample did not drink alcohol, while 40.4% drank alcohol only at feasts or during visits.

78.2% of respondents performed some kinds of physical exercises. 44.8% of workers were doing sports. 12.7% of the asked workers did not perform any exercises or sports.

The number of hours spent on leisure activities was favourable among the respondents. Respondents spent their leisure time mainly with reading, discussions, visiting others, cooking and baking, walking, watching TV, listening to music, going for excursions, gardening or doing sports.

During the last 3 years, as a leisure activity, almost half of university staff respondents spent their holidays inland three or more times, while spending holidays abroad characterised only one-third of them. Approximately 40% of respondents had not been on a holiday abroad at all during the past 3 years.

Women went to breast screening in every two years (42.4%), or less (34.0%), participation in cervix screening was mainly of yearly frequency (64.5%). There was a considerable number of women who participated in cervix screening with less than a two years frequency (18.7%). The male respondents generally went for prostate cancer screening with a less than two years frequency (84.9%).

Respondents considered their own health status quite good on a scale of 5 (mean=3.7, SD=0.80).

Participants considered the promotion and protection of their own health very important. On a scale of 10 the mean was 9.2 (SD=1.17).

A considerable percentage of participants had knowledge about health, health protection and healthy behaviour (96.6%).

At the time of data acquisition participants – except for 5 people – were active workers (98.1%), 86.6% working as employees, while 11.5% worked in managerial positions.

More than one-fourth of respondents were exposed to noise, vibration, infection risk, and were working in the presence of chemicals, dust, and gas.

Employees worked at their workplace daily 7.79±1.77 hours on average, while further 1.97±1.58 hours were spent on doing overtime.

Respondents spent an average of 5.00±2.55 hours daily in front of the computer.

Respondents considered their work more mentally (average: 6.77±2.31) than physically demanding (average: 4.18±2.49).

Respondents declared that they had the possibility to utilize their knowledge and skills, and to make individual choices; their work required many independent ideas and inventiveness. It is worth noting however, that at the same time permanent stress, close deadlines and frequent overtime also characterised their work.

38.3% of respondents considered their work monotone.

56.5% of respondents found the possibility to get a promotion at work characteristic.

On a scale of ten work atmosphere was considered to be quite good (6.87±2.02).

Mainly moral and human appreciation characterised the university staff (55.9%), and the least appreciation came from the financial aspect (22.2%).

A principal component analysis was performed through 19 variables to determine the working conditions the university staff worked under.

Five principal components were identified during the analysis. For the sake of comprehensibility, the individual principal components were named on the basis of variables with a high factor weight. The first principle component (five items) was "job demands" with an explained variance of 14.712; the second principle component (four items) was "autonomy" with an explained variance of 13.178; the third principle component (4 items) was "biological, chemical agents" with an explained variance of 12.148; the fourth principle component (three items) was "negative social interactions" with an explained variance of 10.908; and the fifth principle component (three items) was "physical agents" with an explained variance of 9.790. Focusing on the analysis of psychosocial components, the first, second and fourth principal components were studied as psychosocial characteristics. Job demands (Component 1) refer to the compilation of work condition characteristics such as strict deadlines, permanent stress, frequent overwork, difficulty in meeting requirements, intensity of work and communication problems. Work was called autonomous (Component 2) when the following work environment characteristics applied: the individual had the opportunity to make independent decisions and utilise their own knowledge and skills, the job required many autonomous ideas and inventiveness, and the individual had the possibility of job promotion. In the case of negative social interactions (Component 4), the following characteristic elements were identified: violent behaviour of colleagues, bullying, discrimination and fear of losing one's job.

In terms of job demands, employees suffered from strict deadlines (80.4%), frequent overwork (64.2%), difficulty in meeting requirements (56.7%), communication problems (47.5%), and intensity of work (45.8%). The frequency of negative social interactions was over 10% (bullying 17.2%, discrimination 12.3%, violent behaviour of colleagues 11.5%). Work was also characterised by autonomy. Their work required many autonomous ideas and inventiveness (87.7%), they had the possibility of utilising their own knowledge and skills (84.7%), they could make independent decisions (80.8%), and they had the possibility of job promotion (56.5%).

When analysing responses by sex, significant differences were obtained only in the case of autonomy ($p=0.011$); independence, utilising own knowledge, possibility of job promotion characterised men more than women.

Autonomy was less characteristic in the case of conflicts with colleagues, though this result was on the verge of significance ($p=0.052$), and negative social

reactions were more frequent ($p<0.001$), while the job demands component had no significant association with relationship with colleagues. The more conflicts there were with an employee's superior, the more negative social interactions were reported ($p=0.004$), and less autonomy was characteristic ($p=0.002$).

Financial, professional and moral appreciation had significant relationships with all three psychosocial principal components: in the case of low (practically no) financial, professional and moral appreciation, the job demands component (frequent overwork, strict deadlines, etc.) was more characteristic, and there were more frequent negative social reactions, as well as less autonomy.

Study of university students (Study 2)

Mainly women and first graders completed the questionnaire (N=246). As soon as the COVID-19 vaccine was available, the majority of students (n=218, 88.6%) received it, henceforth we refer to their willingness to vaccinate, compared to those who received the vaccine only after it becoming mandatory or not at all (n=28, 11.4%), which we considered as vaccination reluctance.

In terms of smoking habits, there were significant differences in lifetime prevalence also by sex and grade, with a higher proportion of men and fourth-year students having used some type of tobacco product.

Frequency of alcohol consumption in the past 12 months differed significantly by sex and grade. The highest rates were for drinking alcohol 2-4 times a month.

There was a significant difference in vegetable/vegetable juice consumption by sex, with women consuming a much higher proportion of vegetables more than once a day.

In terms of physical activity, there was a significant difference by sex only in the case of intense physical activity, which was less characteristic of women.

Women seem to lead a more health-conscious lifestyle than men in case of the observed student sample.

Among the 18 statements regarding attitudes towards recommended vaccinations, men were more likely to report "I do not need the recommended vaccinations if I lead a healthy lifestyle" (18.3% vs. 6.1%, $p<0.01$) and "Do not receive recommended vaccinations due to political or religious beliefs" (27.0% vs. 14.5%, $p<0.05$). There were significant differences in opinion by grade for several statements. The statements „If I am afraid of a particular disease, I will receive the recommended vaccination" (89.2% vs. 78.4%, $p<0.05$) and „I have enough information and knowledge about communicable diseases to decide on the recommended vaccination" (81.7% vs. 58.8%, $p<0.001$) were more typical of the students in 4th year, while the other statements (e.g. „I do not need the recommended vaccinations if I lead a healthy lifestyle"; „I do not receive the recommended vaccinations because I am afraid of side effects") were more typical of 1st year.

Discussion

The health promotion programme of the university can be improved if we get to know the characteristics of the health behaviour and working environment of the university staff and students. Health is one of our most important human values, and its preservation and promotion is in the interest of the university employee, the student and, beyond that, the employer, the university's management. Among the factors that influence health, we highlighted the importance of lifestyle and the environment. The effectiveness of the health promotion strategy of the employer and the university management depends on the knowledge of the health-promoting or health-damaging behaviour of employees, students and the specificities of the working environment of university employees.

Employees' health behaviour can also be an example, as the rate of smokers is low and alcohol consumption is also mild. 13.9% of university employees (those with secondary and tertiary education) smoke, which is close to the EHIS 2019 results for Hungary, which show that one in seven people with tertiary education smoke. 8.9% of the students in our study use some form of tobacco products, which is considered a low number based on the Hungarian EHIS 2019, which found that the highest rates of tobacco use were among 18-34 years old. There are more heavy drinkers among men in Hungary, and our survey found the same result among students. It could also be highlighted, that the observed employees drink tap water and mineral water mainly, eat less fatty meat, do not use excessive salting and prefer mixed nutrition. They spend their free time usefully, with nurturing their social bonds, as well as with engaging in cultural and physical activities. Almost 50% of people with tertiary education take exercise to stay healthy, according to the EHIS 2019, as do the employees of the University of Szeged (44.8% participate in sports activities). The presence of one or two intense physical activity sessions per week is also above 40% among students, with male students being more likely to engage in more intense sports activities on a weekly basis.

Some aspects of nutrition, however, needs improvement. Such aspects are the right amount of eating during the day, the preference of whole grain bread to the white one, and the higher frequency of eating raw vegetables and fruits. The daily consumption of fruit and vegetables is below 20% among both workers and students, which is less than half of the European Health Interview Survey 2019 results (over 40% of the national population aged 15 and over consumes fruit and vegetables).

Our research data revealed that health was very important for the employees of the University of Szeged, especially for female workers. With only a few exceptions they all had knowledge concerning health, health protection and healthy lifestyle. Health knowledge and consciousness was also reflected in their actual health behaviour, providing an excellent example for their students. University employees also emphasize the role of the individual in promoting and protecting their own health. Over 95% of students say they can do much, a lot, to protect their own health.

We examined attitudes towards vaccinations among students based on statements about recommended vaccinations. Among first-year students with less theoretical (and practical) knowledge, there were more uncertain than among fourth-year students, for whom the more secure knowledge, the positive influence of the knowledge acquired during university, prevailed. Misconceptions (e.g. “I do not need any recommended vaccinations, my immune system is regularly strengthened.”) are present among students as well.

The mainly employee and a smaller number of managerial university staff worked under suitable working environment in general, except for those working at a health-care oriented area, who were more negative about their work conditions.

Employees dealt with their work 10–10.5 hours daily, part of which had to be done overtime. The pressure to work extra hours characterised men and local employees mainly. By the increase of working hours and extra work time the physical and mental strain was also higher.

Respondents worked with computers 5 hours daily on average. In our study, it is positive that university workers spend less time on computers as they get older, thus preventing the possibility of developing the eye and musculoskeletal problems that are increased by more frequent computer use.

Work was considered to be mentally demanding mainly, the stress appearing to be higher by age.

Our positive result was that a considerable proportion of respondents found their working atmosphere suitable, with good workplace relationships.

There were differing views on financial, professional and moral, human appreciation. The feeling of professional appreciation was higher among the non-health-care oriented faculty employees, staff of faculties with a medical profile felt so only partly. Feeling financially appreciated was not significant among the university staff, only half of respondents considered their financial situation suitable, while almost one-third considered it definitely bad or very bad.

The main strength of the present study is the comprehensive measurement of working conditions in a higher education setting, with a special focus on the psychosocial risk factors. As the 1993 XCIII Law on Safety at Work provides that a Hungarian employer is obliged to take measures towards minimising psychosocial risk factors and the resulting damage to employee health, the present study could evolve into a model applicable in other university settings. The limitations are its cross-sectional nature, the low response rate of the university staff (and, consequently, the low representation of staff without a higher education degree), and the subjective estimation of one’s working conditions, which could be different from the objective status. Future research in the field should reach a higher number of participants and members of each staff category (teaching and non-teaching staff).

Conclusions

We found it very important to get to know the health behaviour of higher education employees and students and the characteristics of the working environment of university employees, thus supporting the development of the health promotion programme of the University of Szeged. Those, who work for the University of Szeged cooperate with young adults every day, aiding their effective knowledge acquisition, while at the same time forming students' health behaviour through the example of their own behaviour and habits. Higher education institutes this way have a direct influence on the lifestyle and health of their members.

To sum all findings up, we can say that employees of the University of Szeged are concerned about their health and act for preserving and promoting it. They strive at creating a good well-being.

With the exception of health care workers, university employees generally work in a suitable working environment.

According to our results it is advisable to carry on with the measures improving employees' infrastructural working conditions. Through a "favourable" work environment work safety and health protection can be improved. It is also necessary to increase financial appreciation – to ensure proper income –, to prevent employees from establishing their financial security elsewhere, and preserve the high quality education of Hungarian universities, in particular at the University of Szeged.

Our data suggests that employees at the University of Szeged are subject to several psychosocial risk factors and work under considerable mental stress. Any decrease in this stress would lead to more effective and efficient work, preserve health and prevent illness. One solution can be the increase in the feeling of financial and moral appreciation, and to create a more optimal working atmosphere.

Students' health behaviour is also acceptable, they have a health promoting attitude and strive to maintain their health. There are misconceptions among medical students, which is why it is essential to increase knowledge about vaccines, update knowledge and improve communication during their education.

Our present research is suitable to base intervention suggestions on its results, the effects of which can be further studied, analysed, and refined. In the long run, a health-promoting leadership approach would be beneficial not only for those working at the university, but also for all employees in society, as their health promotion would result in reduced healthcare expenditure.

Publications related to the Thesis

I. **Mátó, V.**, Tarkó, K., Tóth, K., Nagymajtényi, L. & Paulik, E. (2016). Working Environment of Higher Education Staff – a Survey at University of Szeged, Hungary. *Central European Journal of Occupational and Environmental Medicine*, 22(1-2), 44-52. **ISSN:** 1219-1221

II. **Mátó, V.**, Tarkó, K., Tóth, K., Nagymajtényi, L. & Paulik, E. (2016). Health Behaviour of Higher Education Employees – Value-Transmitting Conduct of Professionals to their Students. *Practice and Theory in Systems of Education*, 11(3), 162-173. DOI 10.1515/ptse-2016-0017

III. **Mátó, V.**, Tarkó, K., Lippai, L., Nagymajtényi, L. & Paulik, E. (2021). Psychosocial work environment risk factors among university employees – a cross-sectional study in Hungary. *ZDRAVSTVENO VARSTVO Slovenian Journal of Public Health*, 60(1), 10-16. DOI 10.2478/sjph-2021-0003
Impact factor: 1.603

IV. **Mátó, V.** (2022). Védőoltásokhoz való hozzáállás egyetemi hallgatók egy csoportjában. *Egészségfejlesztés*, 63(1), 23-31. DOI https://doi.org/10.24365/ef.v63i1.7436

V. Paulik, E., Molnár, R., Zsiros, V., Máté, Z., Maróti-Nagy, Á., Markó-Kucsera, M., Sisák, A., & **Mátó, V.** (2023). A védőoltásokkal kapcsolatos ismeretek és attitűdök orvostanhallgatók körében a COVID–19-pandémia alatt. *Orvosi Hetilap*, 164(21), 803-810. DOI https://doi.org/10.1556/650.2023.32774
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