



Original research article

Depression and burnout among Hungarian health workers during the COVID-19 pandemic

Aniko Nemeth¹ * , Katalin Papp² ¹ University of Szeged, Faculty of Health Sciences and Social Studies, Szeged, Hungary² University of Debrecen, Health Science Faculty, Debrecen, Hungary

Abstract

Introduction: The coronavirus epidemic caught the world by surprise. The already overburdened and understaffed health sector faced new challenges that made the daily lives of health workers even more difficult.

Aim: The purpose of this study was to evaluate the extent of burnout and symptoms of depression in health workers, and their association with work in COVID care and other sociodemographic and workplace factors.

Methods: The cross-sectional study was conducted from 27 January 2022 to 14 February 2022 with a self-constructed questionnaire. Data were analysed with descriptive statistics, Chi-square tests, and Spearman correlations ($p < 0.05$).

Results: Of the 10,285 Hungarian respondents who completed the questionnaire, 42.3% suffered from varying degrees of depression and 64.4% from burnout. These two psychological factors are significantly associated with marital status, sex, number of years in health care, levels of health care, and the length of time working in COVID care. A high degree of burnout and severe depression will result in a negative assessment of the COVID vaccine. The older the respondent, the lower the levels of depression and burnout.

Conclusion: Working in COVID care has had a significant negative impact on the mental health of health workers. It is important to note that the Beck Depression Scale alone is not sufficient to diagnose depression.

Keywords: Burnout; COVID-19; Depression; Healthcare workers

Introduction

The recent pandemic had a significant impact on healthcare. The mental health of healthcare workers has been a topic of ongoing research for a long time, but the stress of the coronavirus pandemic brought the mental health of healthcare workers into even greater focus. It is well known that the health sector faced a sudden increase in workload after the outbreak of the pandemic, causing considerable physical and mental strain on the profession. Many of the health workers involved in COVID (coronavirus disease, 2019) care have been shown to experience secondary stress, which is also associated with the onset of depression (Ariapooran et al., 2022). According to a representative survey conducted by HUNGAROSTUDY 2021 in Hungary, the number of people with moderate depression in the population has doubled as a result of the coronavirus pandemic (Purebl and Réthelyi, 2022). As the mental state of the population has also been greatly affected by the pandemic, it is assumed that it has also caused great psychological damage among health workers. Approximately a quarter of healthcare workers involved in COVID care suffer from depressive symptoms (Pappa et al., 2020), which is exacerbated

by the fact that not all workers have access to mental health support (Osváth, 2021). In a survey conducted in Pakistan in 2020, health workers scored an average score of 10.69 on the Beck Depression Inventory (BDI). Most of them showed mild to moderate symptoms of depression (Iffat et al., 2021). In Turkey, the average BDI score was 12.53 in 2020 among the surveyed health workers, and women scored significantly higher than men. Married people had the lowest average BDI score, followed by single people, divorced people, and widows. Healthcare workers who had direct contact with COVID-19 patients scored significantly higher on the BDI. Years of work experience and the level of education were not associated with the mean BDI scores (Yildirim et al., 2020). Burnout rates also appeared to worsen during the pandemic. A meta-analysis showed that nearly half of healthcare workers experienced burnout during the COVID-19 pandemic, and that not only frontline healthcare workers experienced increased rates of burnout, but also other nonfrontline workers (Ghahramani et al., 2021). Throughout the world, many studies during the pandemic have confirmed high levels of burnout among health workers (Chor et al., 2021; Izdebski et al., 2023; Jalili et al., 2021).

* **Corresponding author:** Aniko Nemeth, University of Szeged, Faculty of Health Sciences and Social Studies, Temesvári krt. 31, 6726 Szeged, Hungary; e-mail: nemeth.aniko.02@szte.hu
<http://doi.org/10.32725/kont.2024.021>

Submitted: 2024-02-05 • Accepted: 2024-04-29 • Prepublished online: 2024-04-29

KONTAKT 26/2: 120–125 • EISSN 1804-7122 • ISSN 1212-4117

© 2024 The Authors. Published by University of South Bohemia in České Budějovice, Faculty of Health and Social Sciences.

This is an open access article under the CC BY-NC-ND license.

Increased workload, burnout, and symptoms of depression during the COVID-19 pandemic contributed to the resignation of healthcare workers, especially doctors and nurses (Tabur et al., 2022).

The objective of our study was to evaluate the extent of symptoms of depression and burnout among Hungarian healthcare workers, and their association with working in COVID care and other sociodemographic and workplace factors.

Materials and methods

Our quantitative cross-sectional study was conducted between 27.01.2022 and 14.02.2022 with a self-completed questionnaire, which was made available to members of the Hungarian Chamber of Health Care Professionals through online platforms. This organisation brings together all healthcare professionals in Hungary (nurses, nursing assistants, physiotherapists, dieticians, paramedics, dental assistants, etc., i.e., anyone who is not a doctor, dentist, or pharmacist). The link to the questionnaire was published on the Chamber's social media page and sent to members who subscribed to the newsletter by email via the National Office of the Chamber. The questionnaire was sent out and published once and the online interface was active for two weeks, after which the possibility to complete the questionnaire was closed.

The questionnaire included the Beck Depression Inventory (BDI) (Beck et al., 1961; Füredi and Németh, 2015), and the Burnout Self-Assessment Scale (Pines et al., 1981). The Beck Depression Inventory consists of 21 questions and can be scored from 0 to 3 (0 = not at all characteristic; 1 = somewhat characteristic; 2 = characteristic; 3 = totally characteristic), with a maximum total score of 63 points. Three levels of depression can be distinguished based on the scores obtained: mild depression (14–19 points), moderate depression (20–28 points), and major depression (29–63 points). The 21 burnout questions can be scored from 1 to 7 (1 = never; 2 = once or twice; 3 = rarely; 4 = sometimes; 5 = often; 6 = usually; 7 = always). A formula is used to determine the degree of burnout, and the resulting average score is used to group respondents into the following four groups: perpetual euphoria (below 1.9 points), doing well (2–2.9 points), change needed (3–3.9 points), and treatment needed (above 4 points). Those in the “change needed” group are already showing symptoms of burnout, and those in the “treatment needed” group are already considered burnt out (Pines et al., 1981).

With the effective cooperation of all regional organisations of the Hungarian Chamber of Health Care Professionals and the National Organisation, 1,030 responses were received during the survey period of just over two weeks. 44 respondents were excluded due to working abroad and duplicate responses, and the responses of 10,285 health professionals were analysed using SPSS 26.0 statistical software. Due to the nature of the data, a Chi-squared test and Spearman rank correlation calculation were performed, and a 5% significance level was used. The Kolmogorov–Smirnov test was used to test the normality of continuous variables (age, number of years in healthcare, number of months worked in COVID, Beck depression scale score, burnout score), and in all cases $p < 0.000$ was obtained, so these variables were further analysed using Spearman rank correlation.

Results

The average age of the respondents was 45.1 years (SD = 11.028; Min = 18; Max = 77), 10.1% were male and 89.9% were female. The average age of employment in the health sector is 22.39 years (SD = 12.76; Min = 0.1; Max = 61) and the majority of the respondents (76.9%) work in the public sector. The highest proportion of respondents were registered in Pest County (Budapest data included) (32%), followed by Csongrád-Csanád County with 8.2%.

3.3% of the respondents have no school diploma, 64.5% have secondary education, and 32.2% have tertiary education. 25.4% work in primary care, 26.6% in outpatient care, and 48% in inpatient care.

On the Beck Depression Inventory, used to assess depression, the average score was 13.08 (SD = 9.309; Min = 0; Max = 59; maximum score: 63). Respondents with a score of less than 13 do not experience depression, accounting for 57.8% of respondents. 19.9% of the respondents were mildly depressed, 15.6% moderately depressed, and 6.8% had major depression. 42.3% of the respondents were found to suffer some degree of depression (Table 1).

Table 1. Severity of depression (N = 10285)

Mood range of surveyed professionals (N = 10285)	
Normal	57.8%
Mild depression	19.8%
Moderate depression	15.6%
Major depression	6.8%

It was also important to look at mental health in terms of burnout, as this is a common phenomenon among healthcare workers. To examine this, we used the Pines et al. (1981) Burnout Inventory, as it can be used to establish burnout categories (Irinzi et al., 2017). 35.6% of the respondents did not yet show symptoms of burnout (they belong to the “perpetual euphoria” and “doing well” groups), 22.4% were already affected (“change needed” group), and 42% showed symptoms of severe burnout and needed treatment (“treatment needed” group). Unsurprisingly, we also found a correlation between depression and burnout ($p < 0.001$). It is clear that the more severe the burnout, the more severe the depression. Although only 1% of the perpetual euphoria group showed symptoms of depression (no severe depression), a significant majority of the treatment-needed group already had depression (Table 2).

Associations between depression and burnout and different sociodemographic factors

A significant difference ($p = 0.006$) was found in the prevalence of depressive symptoms between men and women. 60.1% of men and 57.5% of women were in the normal range. Mild depressive symptoms were found in 19.4% of men and 19.9% of women. Moderate depression was found in 12.3% of men and 16% of women. Severe depression was found in 8.2% of men and 6.6% of women. An inverse significant correlation was found between the age and depression scale score ($p < 0.001$; $r = -0.148^{**}$), i.e., the older the respondent, the lower the depression scale score. The same could be said for burnout ($p < 0.001$; $r = -0.149^{**}$).

Table 2. Relationship of burnout to depression (N = 10285)

Burnout categories	Level of depression				Chi-squared test
	Normal	Mild depression	Moderate depression	Major depression	
Perpetual euphoria	99.0%	0.9%	0.1%	0%	<i>p</i> < 0.001
Doing well	87.2%	8.2%	3.4%	1.2%	
Change needed	68.0%	23.1%	7.4%	1.5%	
Treatment needed	24.1%	30%	31.3%	14.6%	

Significant differences were also found between men and women in terms of burnout (*p* = 0.001). For men, 20.2% of the respondents belonged to the “change needed” group, while 41.1% belonged to the “treatment needed” group. For women, the proportion of respondents belonging to both groups was 22.7% and 42.1% respectively. Marital status is also significantly (*p* < 0.001) associated with depression and burnout.

Table 3 clearly shows that many more single respondents showed symptoms of moderate and severe depression than respondents with any kind of social relationship. An interesting finding is that widows are the least likely to exhibit symptoms of depression. Single respondents also have the highest proportion of burnout (50.1%), followed by those in a relationship (46.1%).

Table 3. Marital status associated with depression and burnout (N = 10285)

Marital status	Level of depression				Chi-squared test	Burnout categories				Chi-squared test
	Normal	Mild depression	Moderate depression	Major depression		Perpetual euphoria	Doing well	Change needed	Treatment needed	
Single	49.9%	20.2%	18.4%	11.6%	<i>p</i> < 0.001	8.8%	22.4%	18.7%	50.1%	<i>p</i> < 0.001
Relationship	53.8%	20.4%	17.8%	8.0%		10.0%	23.3%	20.6%	46.1%	
Married	60.8%	19.6%	14.3%	5.4%		13.1%	24.9%	22.9%	39.2%	
Kind of social relationship	59.3%	20.8%	14.4%	5.5%		10.1%	23.9%	23.9%	42.2%	
Divorced	55.3%	20.0%	17.7%	7.0%		10.1%	23.8%	25.0%	41.1%	
Widower	65.1%	16.0%	12.7%	6.2%		11.6%	26.5%	29.1%	32.7%	

The level of education (no degree, secondary, tertiary) is not associated with depressive symptoms (*p* = 0.102) and burnout (*p* = 0.383), but when comparing respondents without a degree to respondents with a degree, a significant difference (*p* = 0.020) is found for depression, but still not significant for

burnout (*p* = 0.774). It can be concluded that more respondents with a degree fall into the normal range (59.8%) and are less represented in all levels of depression than respondents without a degree. For burnout, there is only a few tenths of a point difference between the two groups (Table 4).

Table 4. Association between having a diploma and depression and burnout (N = 10285)

Diploma in health field	Level of depression				Chi-squared test	Burnout categories				Chi-squared test
	Normal	Mild depression	Moderate depression	Major depression		Perpetual euphoria	Doing well	Change needed	Treatment needed	
Have a diploma	56.8%	20.0%	16.2%	7.0%	<i>p</i> < 0.020	11.2%	24.1%	22.4%	42.3%	<i>p</i> < 0.774
Without diploma	59.8%	19.4%	14.4%	6.4%		11.9%	24.2%	22.5%	41.4%	

Associations between depression and burnout and different workplace factors

There is a significant difference (*p* < 0.001) in the severity of symptoms of depression between health care levels. Only

54.6% of inpatient care workers show a normal state, compared to a higher proportion of outpatient and primary care workers (Table 5).

Table 5. Depression severity associated with level of healthcare (N = 10285)

	Normal	Mild depression	Moderate depression	Major depression	Chi-squared test
Primary care	62.2%	18.9%	13.5%	5.4%	<i>p</i> < 0.001
Outpatient care	59.1%	19.8%	14.7%	6.4%	
In-patient care	54.6%	20.4%	17.3%	7.7%	

When looking at burnout, a significant difference ($p < 0.001$) was also found. 45.9% of inpatient care workers fell into the treatment need group, while significantly fewer of

those working at the other two levels of care fell into this group (Table 6).

Table 6. Association between severity of burnout and level of healthcare (N = 10285)

	Perpetual euphoria	Doing well	Change needed	Treatment needed	Chi-squared test
Primary care	14.0%	26.8%	22.3%	36.9%	$p < 0.001$
Outpatient care	13.9%	23.4%	22.8%	39.9%	
In-patient care	8.7%	23.2%	22.3%	45.8%	

It is also clear that significantly more respondents in the private sector fall into the normal category (62.3%; public: 56.9%), while severe depression affects 7% of public sector workers and 5.3% of private sector workers ($p = 0.006$). A significant difference was also found between the private and public sectors for burnout ($p < 0.001$). Among private sector workers, 35.5% fell into the treatment needed category, compared to 43.3% of public sector respondents.

Spearman rank correlation was used to find the relationship between the number of years in health care and the Beck depression scale score. We found that the longer one has been working in the health sector, the lower the score on this scale, that is, the lower the level of symptoms of depression ($p < 0.001$; $r = -0.106^{**}$). For burnout, we found a similar strong inverse correlation ($p < 0.001$; $r = -0.091^{**}$), i.e., the longer one has been working in the health sector, the lower the level of burnout.

Associations between depression/burnout and attitudes toward working in COVID care and the COVID vaccination

44.8% of the respondents had not worked in COVID care, while the average for the others was 9.42 months (SD = 7.85).

41.9% of the respondents who had worked in COVID care had worked in the field for between 1 and 5 months, 30.6% for between 6 and 12 months, and 27.5% for more than 12 months. The more months a person spent working in COVID care, the more severe their depression ($p < 0.001$; $r = 0.118^{**}$) and burnout symptoms ($p < 0.001$; $r = 0.142^{**}$).

When comparing the stages of willingness to accept the COVID vaccine (Hirdi and Balogh, 2021) with the Beck depression scale and burnout, a significant association was also obtained ($p < 0.001$). 32% of those in the normal state felt ready to receive the vaccine, while significantly fewer of those with symptoms of depression in each group felt this way. More people with major depression (3.7%) felt that the vaccine was dangerous than respondents in other categories (1.5–2.1%). The same trend is observed for each burnout category: the higher the level of burnout, the more reluctant respondents were to receive the COVID vaccine (Table 7).

Table 7. Stages of vaccine acceptance associated with depression and burnout (N = 10285)

Stages of vaccine acceptance	Level of depression				Chi-squared test	Burnout categories				Chi-squared test
	Normal	Mild depression	Moderate depression	Major depression		Perpetual euphoria	Doing well	Change needed	Treatment needed	
"I am ready" (Accept all vaccinations)	32.0%	24.4%	21.5%	24.7%	$p < 0.001$	39.4%	31.5%	27.8%	23.9%	$p < 0.001$
"Okay, I think I'll take the vaccine, but..." (He takes a breath, but hesitates)	23.4%	23.2%	21.5%	19.3%		22.1%	22.6%	25.1%	21.9%	
"I don't know... I'll wait for others to get vaccinated first" (Accept some, delay and reject others)	22.6%	24.1%	25.2%	21.7%		19.0%	23.3%	22.7%	24.6%	
"No, I'm not convinced that it's right for me" (Rejects, but unsure)	20.5%	26.8%	29.6%	30.6%		17.3%	21.0%	23.0%	27.7%	
"Vaccines are dangerous, there's no way I'm getting vaccinated" (Rejects them all)	1.5%	1.5%	2.1%	3.7%		2.1%	1.6%	1.4%	1.9%	

Discussion

In our research, we evaluated the extent of symptoms of depression and burnout among healthcare professionals and their association with working in COVID care and other sociodemographic and workplace factors. The study was carried out in the first quarter of 2022, after the first wave of COVID. The Beck Depression Inventory Question Bank was used to measure depression, and the Pines and Aronson Burnout Inventory was used to assess burnout. Analysis of the responses of 10,285 health professionals revealed that 42.3% of the respondents suffer from some degree of depression; significantly higher than the 25% reported by Pappa et al. in 2020. The mean score for depression in the sample is 13.08, which is higher than the scores measured in Pakistan (Iffat et al., 2021) and Turkey (Yildirim et al., 2020). It is important to note that this does not equate to a diagnosis of depression. In the present sample, 64.4% of the respondents have a mild or more severe form of burnout, which is similar to the results we measured earlier with the same questionnaire package. The use of the Pines and Aronson burnout inventory is not as widespread in international practice, so we cannot compare our results with those of international studies.

Similar to the research by Yildirim et al. (2020), the presence of depression is significantly more common in women than in men – and the same can be said for burnout. Age and the number of years in healthcare were inversely correlated with depression and burnout. That is, the older the respondent and the longer the number of hours in healthcare, the lower the score on the BDI and the Burnout Inventory. The reason for this may be that only those who are not yet tired of work and who feel well both physically and mentally stay in the health sector as they get older. Peer support, in line with other research (Yildirim et al., 2020), has been shown to reduce symptoms of depression, with married people scoring the lowest on the BDI (the same trend is observed for burnout).

Respondents with a degree show significantly lower rates of symptoms of depression and are less affected by burnout than respondents without a degree. The reasons for this may be worth exploring in the future, but it is also possible that they may acquire additional knowledge from psychology or elective subjects during their training that could help them deal with psychological problems and negative feelings. Unsurprisingly, inpatient care workers showed the most severe symptoms of depression and burnout, as they are the ones who have suffered the brunt of the pandemic waves of recent years, encountering the most severely ill patients and often death.

In our study, both work and duration of work in COVID care were significantly associated with the prevalence of depressive symptoms and burnout. Similar to the results obtained by Yildirim et al. (2020), the longer the time spent in COVID care, the higher the score on the Beck Depression Scale.

The introduction of the COVID-19 vaccine has been a divisive topic, not only among lay people but also among health workers. We compared perceptions of this vaccine with measures of depression and burnout. In general, 30–40% of people accept all vaccines, while less than 2% refuse all vaccines (Hirdi and Balogh, 2021). Our results show that 32% of normal people accept all vaccines and only 1.5% refuse, which is in line with the literature. The more severe the depression and burnout, the more dismissive the respondents are about vaccination.

Unsurprisingly, burnout and depression are mutually reinforced – and our results confirm this. When the two go hand in hand, they make already tired and overworked healthcare workers even more vulnerable, compromising the quality of care and patient safety. There is no question that those currently in the field need immediate and effective help to stop the deterioration of their mental state – and possibly reverse it for the better.

To improve the mental well-being of professionals, regular stress management training is essential in Hungary's health sector and self-awareness and communication training is necessary for managers at work. Increasing the financial and moral appreciation of staff could help keep nurses in the profession and make it more attractive to young people. It is also important to ensure that the range of competencies acquired by nurses is matched to the competencies acquired during their training.

A limitation of the survey is that only health professionals who subscribed to the Hungarian Chamber of Health Care Professionals newsletter mailing list or follow the Chamber's social media page were able to fill out the questionnaire. Professionals who did not make use of this possibility did not receive the questionnaire (e.g., older age group).

Conclusion

Once again, nurses have been shown to be in a bad state of mind. It would be important to include courses to help maintain or restore good mental health in nurses' training programmes (e.g. autogenic training, relaxation). Training in self-awareness, communication, and conflict management should be part of the curriculum.

An individual's responsibility for maintaining his/her own physical and mental well-being cannot be denied. Positive incentives can be used to encourage people to participate in workplace programmes and training that help them.

This research has shown that private sector colleagues are more protected against depression and burnout than their public sector counterparts. It is important to conduct comparative research on this topic to identify the factors that contribute to this situation. In light of the results, appropriate measures can then be taken in the public sector.

To improve the mental well-being of health professionals, it is important to introduce the following government measures: a career model for health professionals; bringing health professionals' salaries up to at least 55–65% of medical salaries; greater moral appreciation; the purchase and introduction of nursing aids; a reduction in administrative work; the scope of competences for health professionals should be matched to the competences acquired during training; the increased scope of competences should be accompanied by a salary increase.

The following measures would be required from the employer: regular stress management training at the workplace; self-awareness and communication training for managers; moral and material rewards; any atrocities against a professional worker should be followed up by the employer taking action *ex officio* with the appropriate authority; and a minimum of 14 consecutive days of leave.

The training should include courses that help to maintain or restore a good mental state (e.g., autogenic training, relaxation). Self-awareness, communication, and conflict management training should be part of the curriculum.

Authors' contributions

AN carried out the research, data processing, statistical tests, and wrote the publication, KP provided technical and linguistic proofreading.

Ethical aspects and conflict of interest

The authors have no conflict of interest to declare.

References

- Ariapooran S, Ahadi B, Khezeli M (2022). Depression, anxiety, and suicidal ideation in nurses with and without symptoms of secondary traumatic stress during the COVID-19 outbreak. *Arch Psychiatr Nurs* 37: 76–81. DOI: 10.1016/j.apnu.2021.05.005.
- Beck AT, Ward CH, Mendelson M, Mock J, Erbaugh J (1961). An inventory for measuring depression. *Arch Gen Psychiatry* 4: 561–571. DOI: 10.1001/archpsyc.1961.01710120031004.
- Chor WPD, Ng WM, Cheng L, Situ W, Chong JW, Ng LYA, et al. (2021). Burnout amongst emergency healthcare workers during the COVID-19 pandemic: A multi-center study. *Am J Emerg Med* 46: 700–702. DOI: 10.1016/j.ajem.2020.10.040.
- Füredi J, Németh A (Eds) (2015). *The Hungarian Handbook of Psychiatry [A pszichiátria magyar kézikönyve]*. Medicina Könyvkiadó Zrt. 162. old, 1100 p.
- Ghahramani S, Lankarani KB, Yousefi M, Heydari K, Shahabi S, Azmand S (2021). A Systematic Review and Meta-Analysis of Burnout Among Healthcare Workers During COVID-19. *Front Psychiatry* 12: 758849. DOI: 10.3389/fpsy.2021.758849.
- Hirdi H, Balogh Z (2021). Talking to patients about vaccination in community care: a guide for nurses [Beszélgetés a páciensekkel a védőoltásokról a közösségi ellátásban: útmutató ápolóknak]. *Nővér* 34(5): 30–38.
- Iffat W, Nesar S, Shakeel S, Quamar A, Nazar S, Rahim M, et al. (2021). Measures of Depressive Symptoms Using Beck Depression Inventory-II among Healthcare Professionals during a Pandemic of COVID-19. *Lat Am J Pharm* 40(4): 729–734.
- Irinyi T, Németh A, Lampek K (2017). Comparison of the Pines Burnout Inventory with the Maslach Burnout Inventory. [A Pines-féle Kiégés Leltár összevetése a Maslach Burnout Inventory-val]. *Nővér* 30(6): 11–16.
- Izdebski Z, Kozakiewicz A, Białorudzki M, Dec-Pietrowska J, Mazur J (2023). Occupational Burnout in Healthcare Workers, Stress and Other Symptoms of Work Overload during the COVID-19 Pandemic in Poland. *Int J Environ Res Public Health* 20(3): 2428. DOI: 10.3390/ijerph20032428.
- Jalili M, Niroomand M, Hadavand F, Zeinali K, Fotouhi K (2021). Burnout among healthcare professionals during COVID-19 pandemic: a cross-sectional study. *Int Arch Occup Environ Health* 94(6): 1345–1352. DOI: 10.1007/s00420-021-01695-x.
- Osváth P (2021). Mental health consequences of the COVID-19 pandemic. How can we prepare for a psychodemic crisis? [A COVID-19 pandémia mentálhigiénés következményei. Hogyan tudunk felkészülni a pszichodémiás krízisre?]. *Orvosi Hetilap* 162(10): 366–374. DOI: 10.1556.650.2021.31141.
- Pappa S, Ntella V, Giannakas T, Giannakoulis VG, Papoutsis E, Katsaounou P (2020). Prevalence of depression, anxiety, and insomnia among healthcare workers during the COVID-19 pandemic: a systematic review and meta-analysis. *Brain Behav Immun* 88: 901–907. DOI: 10.1016/j.bbi.2020.05.026.
- Pines AM, Aronson E, Kafry D (1981). *Burnout: from Tedium to personal growth*. New York City, The Free Press, 229 p.
- Purebl G, Réthelyi J (2022). COVID-19 pandemic and mental health: international outlook and preliminary domestic data [COVID-19 világjárvány és mentális egészség: nemzetközi kitekintés és előzetes hazai adatok]. *Népegészségügy* 99(1): 105–111.
- Tabur A, Elkefi S, Emhan A, Mengenci C, Bez Y, Asan O (2022). Anxiety, Burnout and Depression, Psychological Well-Being as Predictor of Healthcare Professionals' Turnover during the COVID-19 Pandemic: Study in a Pandemic Hospital. *Healthcare* 10(3): 525. DOI: 10.3390/healthcare10030525.
- Yildirim TT, Atas O, Asafov A, Yildirim K, Balibey H (2020). Psychological Status of Healthcare Workers during the Covid-19 Pandemic. *J Coll Physicians Surg Pak* 30(6): 26–31. DOI: 10.29271/jcpsp.2020.Supp.S26.