Psychiatr. Pol. 2026; 60(1): 91–104
PL ISSN 0033-2674 (PRINT), ISSN 2391-5854 (ONLINE)
www.psychiatriapolska.pl
DOI: https://doi.org/10.12740/PP/199519

Is there a relationship between insomnia, stress, and job burnout among health care workers?

Karolina Klaudia Słowik[1], Daria Schneider-Matyka[1], Mariola Dombek[2], Grzegorz Wójcik[1], Izabela Cerzniewska[1]

[1] Nursing Department, Faculty of Health Sciences, Pomeranian Medical University in Szczecin, Poland

[2] Student Science Club, Nursing Department, Faculty of Health Sciences, Pomeranian Medical University in Szczecin, Poland

Summary

Aim. The aim of the study was to search for the relationship between insomnia, stress, and occupational burnout and to identify factors influencing their severity among health care workers.

Material and methods. This survey-based study was conducted among 216 health care workers. It was performed using the author questionnaire, the Perceived Stress Scale (PSS-10), the Athens Insomnia Scale (AIS), and the Maslach Burnout Inventory (MBI).

Results. Analysis of the effects of stress (PSS-10) and insomnia (AIS) on occupational burnout showed that stress correlated significantly ($p < 0.05$) and positively ($r > 0$) with all MBI subscales; that is, the more severe the stress, the higher the levels of emotional exhaustion, depersonalization, but also personal accomplishment. Insomnia correlated significantly ($p < 0.05$) and positively ($r > 0$) with all MBI subscales – the more severe the insomnia, the higher the levels of emotional exhaustion, depersonalization, but also personal accomplishment.

Conclusions. (1) Age and work experience were the sociodemographic variables that determined the occurrence of insomnia among the surveyed participants. (2) The form of employment may be an important factor that determines the level of stress, insomnia, and job burnout. Those employed under permanent contracts had lower levels of stress and job burnout, more often suffered from insomnia, and had higher levels of personal accomplishment. (3) In the study group, stress and insomnia influenced all aspects of job burnout. As stress and insomnia increased, so did levels of depersonalization, emotional exhaustion, but also personal accomplishment.

Key words: job burnout, stress, insomnia

Introduction

The term 'job burnout' ('professional burnout'), coined by American psychiatrist Herbert Freudenberger, refers to a state of fatigue or frustration resulting from the lack of expected reward when fully committed to the task or way of life. Burnout syndrome is primarily related to the nature of the performed work. It most often affects employees who face time pressure at work, shift system, too high or too low demands, high responsibility, but also those who frequently come into contact with suffering people. Professions that predispose to burnout include: doctors, nurses, paramedics, teachers, psychologists, and police officers [1, 2].

Although the problem of burnout has been described by researchers since the 1960s, in Poland, it began to be addressed only in the late 1980s [3]. Professional burnout is most often presented in accordance with the theoretical model proposed by Christina Maslach (the *Maslach Burnout Inventory*, MBI). Burnout has been explained as a process of increasing dissatisfaction, and is divided into three aspects: (1) emotional exhaustion, (2) depersonalization, and (3) personal accomplishment. Low levels of involvement in professional work, reduced professional effectiveness, a tendency to conflict, lack of interest, and indifference are just some of the symptoms of burnout [4]. Thus, in the workplace, occupational burnout is associated with lack of energy, loss of physical strength, weight fluctuations, weakened immunity, as well as loss of emotional and mental strength. It may result in poorer performance of professional duties, deterioration of interpersonal relationships, or falling into addictions. In the emotional sphere, the main symptoms are sadness, helplessness, a sense of hopelessness, feelings of 'emptiness' and exhaustion. Mentally, burnout involves loss of faith and motivation, a broadly understood negative attitude, low self-esteem, and isolation [5].

As confirmed by Sęk, occupational burnout is often considered a manifestation of chronic stress, i.e., prolonged contact with highly stressful factors [3]. Medical professions are undoubtedly stressful, and nurses are the occupational group in the health care system that is most exposed to stress. To maintain full professionalism, a nurse should not only perform professional duties at the highest possible level and in accordance with current standards, but also be able to establish interpersonal relationships. Over time, professional skills, knowledge, and competence increase, which in turn causes an increase in responsibility, and consequently more stress. With multiple professional tasks piling up, there is a risk of decreased controllability, which may ultimately lead to burnout. The negative impact of burnout affects every sphere of a nurse's life – professional, personal, family, and social [6]. Antkowiak and Kosior-Lara [7] particularly draw attention to the impact of stress, which worsens relationships in family life and leads to conflict of social roles. Although stress is not a disease in itself, it can lead to illnesses and serious disorders.

The problem of insomnia among nurses was presented in a study by Bańdo [8], who observed insomnia in more than half of the surveyed nurses (51.3%), and the risk of insomnia in about a third of the respondents. Factors that increase the risk of insomnia include depression, chronic diseases, amenorrhea, shift work, poor economic

situation, and experiencing workplace aggression. According to Pokładek [9], insomnia can lead to a very low sense of job satisfaction and burnout in nurses.

Tucholska's research [10] shows that 20% of the world's population is affected by burnout. Based on a meta-analysis involving 113 studies (45,539 nurses from 49 countries) [11], symptoms of severe burnout were found in 11.23% of the nurses.

Aim of the study

The aim of the study was to search for the relationship between insomnia, stress, and occupational burnout, and to identify factors influencing their severity among health care workers.

Material and methods

This survey-based study was conducted among 216 health care workers (doctors, nurses, paramedics, and medical caregivers) employed in health care facilities in the West Pomeranian Voivodeship. A questionnaire-based method was used, involving a diagnostic survey. The following were also used: an original survey questionnaire, the Polish version of the *Perceived Stress Scale* (PSS-10), the *Athens Insomnia Scale* (AIS), and the *Maslach Burnout Inventory* (MBI).

The original questionnaire consisted of 20 questions concerning sociodemographic data, such as age, sex, education, place of residence, marital status, offspring, work experience, workplace, form of employment, and position.

The *Perceived Stress Scale* (PSS-10), developed by Cohen, Kamarck, and Mermelstein, in the Polish adaptation by Juczyński and Ogińska Bulik (2009), is used to measure subjectively perceived stress related to the respondent's living situation over the past month. It is a short, easy-to-use, self-reported questionnaire, which contains 10 queries on various subjective feelings related to personal problems and events, behaviors, and ways of coping with stressful situations. Answers are rated on a five-point Likert scale, where 0 = "never," 1 = "almost never," 2 = "sometimes," 3 = "quite often," 4 = "very often." The results are converted into sten scores, which reflect the severity of stress: 1–4 sten score – low, 5–6 sten score – average, and 7–10 sten score – high [12].

The *Athens Insomnia Scale* (AIS), developed by a group of scientists in Athens, is used to diagnose insomnia. It consists of eight items concerning falling asleep, waking up at night, waking up in the morning, total sleep time, sleep quality, well-being the next day, psychophysical performance the next day, and daytime sleepiness. Obtaining a positive result indicates a high probability of the occurrence of insomnia. Each item is rated from 0 to 3 points, where 0 means no given symptom, and 3 means its significant severity. The total score may range from 0 to 24 – the higher the score, the worse the quality of sleep. A total score of 8 points or more indicates insomnia. The results are interpreted according to the standards developed by the authors of the questionnaire [13].

The *Maslach Burnout Inventory* (MBI) is a measure of burnout. It consists of three subscales covering three aspects of burnout: emotional exhaustion, depersonalization,

and personal accomplishment (this subscale is interpreted reversely – high job satisfaction = low level of burnout caused by lack of personal accomplishment). The results are calculated separately for each subscale, and interpreted on the basis of distinct norms showing whether the level of burnout is high, medium or low. The MBI includes 22 questions, each rated on a 7-point Likert scale (from 0 to 6). The questionnaire takes into account affirmative answers (to questions 1–14) and negative answers (to questions 15–22). The points for affirmative answers (in questions 1–14) and negative answers (in questions 15–22) are summed up. Burnout is measured using three subscales, the average of which allows for an overall assessment of the problem. The first is **emotional exhaustion** – the higher the score on this scale, the greater the feeling of work fatigue. The second subscale is **lack of personal accomplishment**, where the relationship is reversed: a high score indicates commitment and satisfaction, while a low score indicates a lack of faith in one's own success, which contributes to burnout. The final factor is **depersonalization**, or distancing oneself from others and treating other people as objects at work; here a high score also signals a more serious problem[14].

The respondents were briefed on the subject matter and purpose of the study, and were informed that completing the questionnaire was voluntary and anonymous, and that the obtained data would be used for scientific purposes. The respondents who agreed to participate in the study were given a set of questionnaires, which they completed independently. In case of doubts regarding questions, explanations were provided on an ongoing basis. The inclusion criteria for the study were: practicing a medical profession and giving written informed consent to participate in the study. The exclusion criterion was the lack of consent to participate in the study.

A positive opinion from the Bioethics Committee (KB-0012/219/06/16) was obtained prior to the study. The research was based on the principles of the Declaration of Helsinki.

Statistical analysis

Analysis of quantitative variables was carried out by calculating the mean, standard deviation, median, and quartiles. Analysis of qualitative variables was performed by calculating the number and percentage of occurrences of each value. The Kruskal-Wallis test was used to compare the quantitative variables in three or more groups. Once statistically significant differences were detected, post-hoc analysis was performed with Dunn's test to identify statistically significantly different groups. Correlations between quantitative variables were analyzed using Spearman's correlation coefficient.

A significance level of 0.05 was adopted in the analysis, so all p-values below 0.05 were interpreted as indicating significant relationships. The analysis was performed using the R software, version 4.1.2: R Core Team (2021). R: A language and environment for statistical computing. R Foundation for Statistical Computing, Vienna, Austria. URL, source: https://www.R-project.org/).

Results

Characteristics of the study sample

The research was conducted in a group of 216 health care workers. The largest group of respondents were women (68.98%) aged 46–50 years (21.76%). The age of the respondents was 42.12 years on average, and ranged from 24 to 63 years. More than half of the respondents were in a formal relationship (51.39%). Most of the subjects lived in cities with more than 100,000 residents (37.5%) and had third-level education (71.76%). The average work experience was 19.29 years and ranged from 1 to 42 years. Almost half of the respondents (44.44%) were employed under a permanent contract. Nurses made up the largest subgroup – 62.50%.

Stress, insomnia, and job burnout

In our study, we measured the level of stress (PSS-10), insomnia (AIS), and job burnout (MBI). The mean level of stress was 17 ± 5.07, median: 18, minimum value: 0, and maximum value: 30 points. A similar number of respondents had high (37.5%) and medium (35.65%) levels of stress, while 26.85% of respondents had low levels of stress (Table 1).

Table 1. **The level of stress according to the PSS-10**

PSS-10 (scores)	Interpretation	*n*	%
0–13	Low level of stress	58	26.85
14–19	Medium level of stress	77	35.65
over 19	High level of stress	81	37.50

The average severity of insomnia was 6.5 ± 4.4, median: 6, minimum value: 0, maximum: 18. More than half (57.41%) of the subjects suffered from insomnia, while 42.59% did not have this problem (Table 2).

Table 2. **The severity of insomnia according to the AIS**

AIS (scores)	Interpretation	*n*	%
0–5	No insomnia	92	42.59
6–24	Insomnia	124	57.41

As for the MBI results, 59.26% of the respondents had a high level of emotional exhaustion, 33.33% had a medium level of emotional exhaustion, and 7.41% had a low level of emotional exhaustion. As many as 73.15% of the subjects had high levels of depersonalization, 24.54% had medium levels of depersonalization, and 2.31% had low levels of depersonalization. 75% of the respondents had low levels of personal accomplishment, 24.54% had medium levels of personal accomplishment, and less than 1% had high levels of personal accomplishment (Table 3).

Table 3. **Emotional exhaustion, depersonalization and personal accomplishment according to the MBI**

Scores	Interpretation	*n*	%
Emotional exhaustion			
0–16	Low level	16	7.41
17–26	Medium level	72	33.33
over 26	High level	128	59.26
Depersonalization			
0–6	Low level	5	2.31
7–12	Medium level	53	24.54
over 12	High level	158	73.15
Personal accomplishment			
0–31	Low level	162	75.00
32–38	Medium level	53	24.54
over 38	High level	1	0.46

The results showing a high level of depersonalization, and a very low level of personal accomplishment were confirmed by the median and the advantage of the Q3 quartile over the Q1 quartile (Table 4).

Table 4. **Descriptive statistics for the MBI**

MBI	*N*	Mean	*SD*	Median	Min	Max	Q1	Q3
Emotional exhaustion	216	28.77	7.86	28	10	50	24	34
Depersonalization	216	16.24	4.94	16	4	26	12	20
Personal accomplishment	216	28.13	4.92	28	8	40	26	30.5

Analysis of the impact of sociodemographic factors on stress, insomnia, and burnout

We analyzed the influence of sociodemographic factors, such as age, education, marital status, work experience, and form of employment on the level of perceived stress according to the PSS-10, insomnia according to the AIS, and job burnout according to the MBI.

The analysis showed a statistically significant (p <0.05) correlation between insomnia according to the AIS and the age of the respondents – the older the age, the higher the severity of insomnia (Table 6). Neither stress (PSS-10) nor insomnia (AIS) nor job burnout (MBI) correlated statistically significantly (p >0.05) with education or marital status.

Similarly, neither stress (PSS-10) nor job burnout (MBI) correlated statistically significantly (p >0.05) with work experience of the respondents. However, there was

a statistically significant positive correlation (p <0.05; r = 0.253) between insomnia (AIS) and work experience (Table 5).

Table 5. **Correlations of age and work experience with insomnia according to the AIS**

Variables	Spearman's correlation coefficient	*p*
Age and AIS	0.3	p <0.001
Work experience and AIS	0.253	p <0.001

Next, we analyzed the impact of the form of employment on the level of stress (PSS-10), insomnia (AIS), and job burnout (MBI). We found statistically significant differences (p <0.05) in the level of stress depending on the form of employment. Stress was significantly higher in those employed under a permanent contract than in those employed under a fixed-term contract or a fee-for-task agreement, and significantly higher in workers employed under a contractual agreement than in their counterparts employed under a fee-for-task agreement.

Further analysis revealed statistically significant differences (p <0.05) in the severity of insomnia depending on the form of employment. Individuals employed under a permanent contract suffered from significantly more severe insomnia than those working under a contractual agreement or a fee-for-task agreement (Table 6).

Table 6. **The level of stress according to the PSS-10 and insomnia according to the AIS with regard to the form employment**

PSS-10 [scores]	Form of employment				*p*
	Permanent contract (n = 98) – A	Contractual agreement (n = 73) –B	Fixed-term contract (n = 36) – C	Fee-for-task agreement (n = 9) – D	
mean ± SD	17.98 ± 5.11	16.74 ± 4.54	15.83 ± 5	13.11 ± 6.66	p = 0.005
median	19	18	17	12	
quartiles	14–22	13–20	13.75–19.25	9–13	A > C, D; B > D
AIS [scores]					
mean ± SD	7.62 ± 4.36	5.56 ± 4.49	5.86 ± 3.8	4.56 ± 4.03	p = 0.006
median	7.5	5	5	6	
quartiles	4.25–10	1–9	3–9	1–6	A > D, B

p – Kruskal-Wallis test + post-hoc analysis (Dunn's test)

There were statistically significant differences (p <0.05) in the level of burnout as measured by the MBI depending on the form of employment. Respondents working under a permanent contract or a fee-for-task agreement had significantly higher job satisfaction than those employed under a contractual agreement (Table 7).

Table 7. **Occupational burnout according to the MBI with regard to the form of employment**

MBI		Form of employment				p
		Permanent contract (*n* = 98) – A	Contractual agreement (n = 73) – B	Fixed-term contract (*n* = 36) – C	Fee-for-task agreement (*n* = 9) – D	
Emotional exhaustion	mean ± *SD*	29.69 ± 8.92	27.95 ± 6.42	27.61 ± 7.5	30 ± 7.35	p = 0.587
	median	30	28	26	28	
	quartiles	24–34	24–32	24–34	28–28	
Depersonalization	mean ± *SD*	16.47 ± 5.42	15.78 ± 4.29	15.67 ± 4.55	19.78 ± 5.04	p = 0.11
	median	18	16	16	20	
	quartiles	12–20	12–18	12–20	20–22	
Personal accomplishment	mean ± *SD*	28.67 ± 5.33	27.01 ± 4.77	28.33 ± 3.99	30.44 ± 3.13	*p* = 0.047 *
	median	29	28	28	30	
	quartiles	26–32	24–30	28–30.5	30–30	D, A > B

p – Kruskal-Wallis test + post-hoc analysis (Dunn's test)

* statistical significance (p <0.05)

The impact of stress and insomnia on occupational burnout

Then we analyzed the effects of stress (PSS-10) and insomnia (AIS) on job burnout (MBI). We noted that the severity of stress and insomnia correlated significantly (p <0.05) positively (r >0) with all aspects of occupational burnout as measured by the MBI subscales. Emotional exhaustion was found to increase with the severity of stress and insomnia (Table 8).

Table 8. **Correlations between the aspects of burnout according to the MBI and the severity of stress (PSS-10) and insomnia (AIS)**

MBI	PSS-10	AIS
	Spearman's correlation coefficient	Spearman's correlation coefficient
Emotional exhaustion	*r* = 0.498; *p* <0.001 *	*r* = 0.469; *p* <0.001 *
Depersonalization	*r* = 0.152; *p* = 0.025 *	*r* = 0.205; *p* = 0.002 *
Personal accomplishment	*r* = 0.175; *p* = 0.01 *	*r* = 0.196; *p* = 0.004 *

* statistical significance (p <0.05)

Discussion

Contemporary research shows that burnout affects various professional groups and various specialties [15–17]. The literature pays particular attention to medical professions, which play an important role in working with suffering people. One such profession is nursing, which is associated with a high risk of exposure to stress [18]. As of 2022, occupational burnout has been included by the World Health Organization in the eleventh revision of the *International Classification of Diseases* (ICD-11). According to the ICD-11, it is a syndrome caused by chronic stress in the workplace that has not been successfully managed. However, burnout remains unclassified as an occupational disease under Polish law, and unincluded in the list of occupational diseases referred to in Article 235 (1) of the Labor Code [19, 20].

In our study, the majority of respondents had high and medium levels of stress in the workplace. Similarly, Burba and Gotlib [21] reported high levels of stress in 84% of nurses. Kuszplak [22] noted that about 34% of the surveyed nurses had high levels occupational burnout and 0.6% had low levels of occupational burnout. In a study by Kędra and Sanak [18], over half of the nurses had a feeling of burnout, and the vast majority of them were considering changing their job. Probably among the most stressful factors were working under time pressure, and being responsible for the life and health of a patient [18].

Our outcomes as well as those obtained by other researchers [16, 23, 24] show that some sociodemographic data, such as age, work experience, and form of employment may be related to the symptoms of burnout, and may also correlate with high levels of stress. Kupcewicz observed high levels of emotional exhaustion (57.33%), medium levels of depersonalization (38.67%), and low levels of personal accomplishment (45.33%) in nurses. The increase in professional burnout among nurses was determined by psychosocial, sociodemographic, and organizational factors [25]. Research conducted in sub-Saharan Africa revealed high levels of burnout associated with unfavorable working conditions, high job demands, and low job satisfaction [26].

Health care workers are exposed to stress during their work, which translates into problems with insomnia [27]. Although our study showed that stress and insomnia were accompanied by a higher sense of personal accomplishment, they were also found to increase emotional exhaustion and depersonalization. Furthermore, Gustavsson et al. [28] confirm that health care workers experiencing poor sleep quality are at risk of burnout, depression, and anxiety. A study by Ogińska-Bulik [29] indicates that the greater the occupational stress an employee feels, the lower the level of job satisfaction, while dissatisfaction with the performance of duties is higher. According to Levert et al. [30], the causes of emotional exhaustion and depersonalization are related to workload, lack of support from co-workers, role conflict, and role ambiguity. Excessive professional demands and lack of support were also mentioned by Walkiewicz et al. [16], however these authors emphasized the great importance of peer relationships in the workplace in the case of medical professions. Tselebis et al. [31] assert that family support positively affects the quality of nurses' sleep, which in turn lowers their stress levels.

As results from our study, the age of respondents does not affect the level of stress or burnout they experience. The lack of relationship between age and burnout has been confirmed by many other authors [32, 33]. There are also researchers who claim that older age is associated with a decline in depersonalization and overall job burnout [34–37]. Nevertheless, most agree that the level of burnout among medical staff increases with age [16, 23, 24].

Other aspects of job burnout that are correlated with age have also been investigated. One example is emotional exhaustion, which according to Lin et al. [38] and Iglesias et al. [39], increases with age, as opposed to a sense of personal achievement, which tends to decrease as reported by Alacacioglu et al [40]. Our findings revealed high levels of emotional exhaustion and depersonalization, but at the same time high levels of personal accomplishment in most of the respondents. This is not supported by the results of a study by Sarabi et al. [41], conducted in rural areas of southeastern Iran, which showed an increase in burnout along with a decrease in personal accomplishment among health care workers.

Based on our results, it can be assumed that stress is related to job burnout. Moreover, most studies have shown a positive relationship between burnout and work experience. In our investigation neither the level of stress nor job burnout were related to the length of service. However, we found a statistically significant positive correlation between work experience and insomnia: the longer the work experience, the more severe the insomnia. Participants with longer work experience had more severe insomnia, which is also associated with their age. A significant impact of age on the severity of insomnia has also been confirmed by Guclu et al. [42]. Burba and Gotlib [21], on the other hand, observed average levels of stress in their study. In our study, there was a positive association between nurses with shorter work experience and more frequent stress. Kuszplak [22] proves that the longer the period of employment, the stronger the emotional exhaustion. As for the variables regarding personal accomplishment and job satisfaction, no significant relationships were observed.

Our study showed that people employed under a permanent contract had higher levels of personal accomplishment, but also higher levels of stress and insomnia compared to those employed under a contractual agreement or a fee-for-task agreement. Studies by other authors addressing issues related to factors influencing the level of stress and burnout do not take into account the form of employment. Based on our research, it can be concluded that lower employment stability results in higher stress and a lower sense of personal accomplishment.

To sum up, people working in medical professions are particularly vulnerable to burnout, determined by stress, insomnia, and low levels of job satisfaction [43, 44]. In light of the negative impact of the above-mentioned determinants on the health and quality of life of medical workers [45], there is a need to conduct further research on burnout, which will make it possible to develop algorithms to support employees at risk of or with diagnosed symptoms of burnout [18]. Ledikwe et al. [46] demonstrated a positive impact of well-being activities in the workplace, which can increase feelings of job satisfaction and effectiveness, and reduce stress and job burnout. Another way to reduce stress is mindfulness meditation [47, 48]. Green et al. [47] confirmed

positive effects of mindfulness meditation on stress levels, all aspects of job burnout, resilience, levels of compassion, and emotional regulation.

Limitations

The study presented here has some limitations. The respondents were self-reported individuals who met the inclusion criteria, but without random selection. A continuation of the study in a larger group of respondents would allow generalized conclusions to be drawn. A strength of the study is the use of standardized tools: the PSS-10, the AIS, and the MBI, all of which are reliable tools for examining factors affecting job burnout.

Conclusions

1. Age and work experience were those sociodemographic variables that determined the occurrence of insomnia among the respondents.
2. The form of employment may be an important factor that determines the level of stress, insomnia, and job burnout. Those employed under permanent contracts had lower levels of stress and job burnout, more often suffered from insomnia, and had higher levels of personal accomplishment.
3. Stress and insomnia determined all aspects of job burnout. As stress and insomnia increased, so did levels of depersonalization, emotional exhaustion, but also personal accomplishment.

References

1. Witczak A, Kazimierczyk J. *Satysfakcja zawodowa a stres zawodowy*. Zielona Gora: Polish Economic Society; 2022.
2. Gonczaryk A, Sady N, Kosoń A, Motyl M, Chojnowska-Ćwiąkała I, Bartyzel M. *Psychospołeczne czynniki ryzyka zawodowego występujące w środowisku pracy ratowników medycznych*. Med. Śród. 2022; 25(3–4): 66–71. https://doi.org/10.26444/ms/161596.
3. Sęk H. *Uwarunkowania i mechanizmy wypalenia zawodowego w modelu społecznej psychologii poznawczej*. In: Sęk H, editor. *Wypalenie zawodowe. Przyczyny i zapobieganie*. Warsaw: Polish Scientific Publishers PWN; 2011.
4. Hołyst B. *Zagrożenia ładu społecznego.* Warsaw: Polish Medical Publisher; 2013.
5. Anczewska M, Świtaj P, RoszczyńskaRoszczyńska J. *Wypalenia zawodowe*. Postęp. Psychiatr. Neurologii 2005; 14(2): 75–76.
6. Dawidziuk K, Lishchynsky Y, Wojciechowska M, Kopański Z, Marczewska S, Uracz W. *Skutki wypalenia zawodowego i sposoby radzenia sobie ze stresem*. Journal of Public Health, Nursing and Medical Rescue 2011; 4: 23–24.
7. Antkowiak A, Kosior-Lara A. *Wpływ stresu na pracę pielęgniarek a wypalenie zawodowe*. Department of Nursing, Faculty of Health Sciences, Jan Dlugosz University in Czestochowa; 2020.
8. Bańdo K. *Bezsenność wśród pielęgniarek zatrudnionych w szpitalach w Małopolsce*. Krakow: Jagiellonian University Press; 2023.

9. Pokładek M. *Zjawisko bezsenności wśród pielęgniarek pracujących w Szpitalu Specjalistycznym w Krakowie*. Krakow: Jagiellonian University Press; 2022.
10. Tucholska S. *Wypalenie zawodowe w ujęciu strukturalnym i dynamicznym. Wypalenie zawodowe pracowników służb społecznych*. Lublin: Catholic University of Lublin: 2008; 15–32.
11. Woo T, Ho R, Tang A, Tam W. *Global prevalence of burnout symptoms among nurses: A systematic review and meta-analysis*. J. Psychiatr. Res. 2020; 123: 9–20.
12. Sheldon C, Kamarck T, Mermelstein R. *PSS10*. Adaptacja: Zygfryd Juczyński i Nina Ogińska-Bulik. Warsaw: Psychological Test Laboratory; 2009.
13. Fornal-Pawłowska M, Wolyńczyk-Gmaj D, Szelenberger W. *Walidacja Ateńskiej Skali Bezsenności*. Psychiatr. Pol. 2011; 45(2): 211–219.
14. Pasikowski T. *Polska adaptacja kwestionariusza Maslach Burnout Inventory. Wypalenie zawodowe przyczyny i zapobieganie*. Warsaw: Polish Medical Publisher; 2012.
15. Lachowska B, Starczewski K. *Kryzys w wartościowaniu i pracy a wypalenie zawodowe u nauczycieli religii*. Med. Pr. 2017; 68(1): 85–95.
16. Walkiewicz M, Sowińska K, Tartas M. *Wypalenie zawodowe wśród personelu medycznego – przegląd literatury*. Przegl. Lek. 2014; 71(5): 264–266.
17. Sygit-Kowalkowska E, Weber-Rajek M, Herkt M, Ossowski R. *Wypalenie zawodowe u funkcjonariuszy służby więziennej. Rola osobowości i wybranych cech zawodowych*. Med. Pr. 2017; 68(1): 85–94.
18. Kędra E, Sanak K. *Stres i wypalenie zawodowe w pracy pielęgniarek*. Piel. Zdr. Publ. 2013; 3(2): 119–132.
19. Act of 26 June 1974, Labor Code (Journal of Laws [Dz. U.] of 2014, item 1502 as amended).
20. Tołkacz M, Zalewska-Janowska A, Pietrzak A, Ograczyk-Piotrowska A, Kabzińska Z. *Stres i wypalenie zawodowe wśród kobiet pracujących w różnych segmentach rynku farmaceutycznego*. Acta Universitatis Lodziensis. Folia Sociologica 2019; (68): 107–123.
21. Burba M, Gotlib J. *Ocena występowania stresu w grupie pielęgniarek zatrudnionych w samodzielnym publicznym szpitalu klinicznym im. prof. Witolda Orłowskiego w Warszawie*. Pielęgniarstwo Pol. 2017; 1(63): 54–59.
22. Kuszplak K. *Satysfakcja z pracy, a wypalenie zawodowe pielęgniarek i pielęgniarzy*. Lublin: Medical University of Lublin; 2023.
23. Meeusen V, Van Dam K, Brown-Mahoney C, Van Zendert A, Knapa H. *Burnout, psychosomatic symptoms and job satisfaction among Dutch anaesthetists: A survey*. Acta Anaesthesiol. Scand. 2010; 54(5): 616–621.
24. Tunc T, Kutanis R. *Role conflict, role ambiguity and burnout in nurses and physicians of university hospital in Turkey*. Nurs. Health Sci. 2009; 11(4): 410–416.
25. Kupcewicz E, Szczypiński W. *Wpływ wybranych zmiennych społeczno-demograficznych i związanych ze środowiskiem pracy na poziom wypalenia zawodowego pielęgniarek*. Piel. Pol. 2018; 68(2): 165–172.
26. Dubale B, Friedman W, Chemali WL, Denninger Z, Mehta JW, Alem DH et al. *A systematic review of burnout among healthcare providers in Sub-Saharan Africa*. BMC Public Health. 2019; 19(1): 1247.
27. Maharaj S, Lees T, Lal S. *Prevalence and risk factors of depression, anxiety, and stress in a cohort of Australian nurses*. Int. J. Environ. Res. Public Health 2018; 16(1): 61.
28. Gustavsson K, Jernajczyk W, Wichniak A. *Związek systemu pracy i stresu zawodowego z wybranymi aspektami zdrowia psychicznego lekarzy i pielęgniarek*. Doctoral thesis. Warsaw; 2023.

29. Ogińska-Bulik N. *Stres zawodowy i jego konsekwencje w grupie pracowników sektora usług społecznych – rola inteligencji emocjonalnej*. Przegląd Psychologiczny. 2008; 51(1): 69–85.

30. Levert T, Lucas M, Ortlepp K. *Burnout in psychiatric nurses: Contributions of the work environment and a sense of coherence*. S. Afr. J. Psychol. 2000; 30(2): 36–44.

31. Tselebis A, Lekka D, Sikaras C, Tsomaka E, Tassopoulos A, Ilias I et al. *Bezsenność, odczuwany stres i wsparcie rodzinne wśród personelu pielęgniarskiego podczas kryzysu pandemicznego*. Healthcare 2020; 8(4): 434. https://doi.org/10.3390/healthcare8040434.

32. Hanrahan NP, Aiken LH, McClaine L, Hanlon AL. *Relationship between psychiatric nurse work environments and nurse burnout in acute care general hospitals*. Issues Ment. Health Nurs. 2010; 31(3): 198–207.

33. Kapucu SS, Akkus Y, Akdemir N, Karacan Y. *The burnout and exhaustion levels of nurses working in hemodialysis units*. J. Ren. Care 2009; 35(3): 134–140.

34. Ersoy-Kart M. *Relations among social support burnout and experiences of anger: An investigation among emergency nurses*. Nurs. Forum 2009; 44(3); 165–174.

35. Al-Turki HA, Al-Turki RA, Al-Dardas HA, Al-Gazol MR, Al-Maghrabi GH, Al-Enizi NH et al. *Burnout syndrome among multinational nurses working in Saudi Arabia*. Ann. Afr. Med. 2010; 9(4): 226–229.

36. Panagopoulu E, Montgomery A, Benos A. *Burnout in internal medicine physicians: Differences between residents and specialists*. Eur. J. Intern. Med. 2006; 17(3): 195–200.

37. Shirom A, Nirel N, Vinokur AD. *Work hours and caseload as predictors of physician burnout: The mediating effects by perceived workload and by autonomy*. Appl. Psychol. 2010; 59(4): 539–565.

38. Lin F, St John W, McVeigh C. *Burnout among hospital nurses in China*. J. Nurs. Manag. 2009; 17(3): 294–301.

39. Iglesias MEL, Bengoa Vallejo de RB, Fuentes PS. *The relationship between experiential avoidance and burnout syndrome in critical care nurses: A cross-sectional questionnaire survey*. Int. J. Nurs. Stud. 2010; 47(1): 30–37.

40. Alacacioglu A, Yavuzsen T, Dirioz M, Oztop I, Yilmaz U. *Burnout in nurses and physicians working at an oncology department*. Psychooncology 2009; 18(5): 543–548.

41. Sarabi RE, Javanmard R, Shahrbabaki PM. *Study of burnout syndrome, job satisfaction and related factors among health care workers in rural areas of Southeastern Iran*. AIMS Public Health 2020; 7(1): 158–168.

42. Guclu A, Karadag O, Akkoyunlu ME, Acican T, Sertogullarindan B, Kirbas G et al. *Association between burnout, anxiety and insomnia in healthcare workers: A cross-sectional study*. Psychol. Health Med. 2022; 27(5): 1117–1130.

43. Jarzynkowski P, Książek J, Piotrkowska R, Dobosz M. *Zespół wypalenia zawodowego wśród pracowników zawodów medycznych*. Medycyna Rodzinna 2017; 2: 108–109.

44. Tomaszewska K, Porczak W, Guty E, Majchrowicz B. *Professional burnout syndrome in a group of nursing staff employed in a psychiatric hospital*. J. Educ. Health Sport 2023; 30(1): 28–37. http://dx.doi.org/10.12775/JEHS.2023.30.01.002.

45. Saygili M, Avci K, Sönmez S. *Quality of work life and burnout in healthcare workers in Turkey*. J. Health Manag. 2020; 22(3): 317–329. https://doi.org/10.1177/0972063420938562.

46. Ledikwe JH, Kleinman NJ, Mpho M, Mothibedi H, Mawandia S, Semo BW et al. *Associations between healthcare worker participation in workplace wellness activities and job satisfaction, occupational stress and burnout: A cross-sectional study in Botswana*. BMJ Open 2018;

16:8(3): e018492. https://doi.org/10.1136/bmjopen-2017-018492. PMID: 29549200; PMCID: PMC5857656.

47. Green A, Kinchen V. *The effects of mindfulness meditation on stress and burnout in nurses*. J. Holist. Nurs. 2021; 39(4): 356–368.

48. Yuan Z, Yu D, Zhao H, Wnag Y, Jiang W, Chen D et al. *Burnout of healthcare workers based on the effort-reward imbalance model: A cross-sectional study in China*. Int. J. Public Health 2021; 66: 599831. https://doi.org/10.3389/ijph.2021.599831.

Corresponding author: Karolina Słowik
e-mail: karolina.slowik@pum.edu.pl