



## Peculiarities of professional burnout of nurses in war condition

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**Abstract.** Professional burnout among inpatient nurses who provide medical care to wounded military personnel is a significant problem for healthcare facilities, as it negatively affects the quality of care and requires further study to develop preventive measures at the individual and group levels to prevent it. The study aimed to conduct a comparative assessment of professional burnout among inpatient nurses providing medical care to military and civilian populations. A survey of 292 inpatient nurses was conducted. The level of professional burnout was determined according to the questionnaire by K. Maslach and S. Jackson. Correlation and regression analysis were used to determine the leading factors influencing the development of professional burnout in nurses. The study determined that the high level of emotional exhaustion in nurses who constantly worked with the military was 1.6 times ( $p = 0.038$ ) higher than in nurses who were engaged in providing medical care to civilians and rarely worked with the military, depersonalisation was 1.8 times ( $p = 0.007$ ), and the reduction of personal achievements was 1.9 times ( $p = 0.022$ ). Using multivariate linear regression analysis, it was found that the presence of chronic diseases, age, length of service, the number of night shifts worked during the month, as well as the presence of children with a high level of statistical significance affect the development of professional burnout in nurses during the war. Conducting activities with nurses in the form of courses or lectures aimed at improving communication competencies helps to reduce the level of professional burnout

**Keywords:** healthcare professionals; health factors; medical care for the military; emotional exhaustion; regression analysis

### ★ INTRODUCTION

The level of professional burnout in nurses is more pronounced compared to other healthcare professions [1]. This is due to the heavy workload of nurses in the performance of their professional duties, and their high responsibility not only for the health of patients but also for their lives. N. Terenda *et al.* [2] emphasise that nurses often face extreme conditions at their workplaces that require immediate decision-making, patients in terminal conditions, and conditions of severe psycho-emotional stress, which leads to emotional exhaustion and depersonalisation. However, researchers do not distinguish separately the relationship between socio-demographic and professional factors and the level of burnout.

L. Buckley *et al.* [3] point out that by performing a large amount of work related to the medical and diagnostic process, nurses experience serious physical and psychological stress, which can lead to exhaustion, and then to a decrease in productivity, errors in clinical conditions and a decrease in care in the treatment of patients, which are signs of professional burnout.

M.K. Shah *et al.* [4] proved through numerous questionnaires that nurses working in inpatient departments have a higher chance of developing burnout than nurses working in outpatient departments. The authors also note the impact of the duration of work hours during the week on the development of professional burnout of nurses.

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Currently, there is a need to identify the leading factors that determine the development of professional burnout of nurses in different departments to develop measures aimed at reducing and preventing burnout. The stressful nature of nurses' work often leads to the development of the highest levels of burnout and, in some cases, disability. A. Larysz *et al.* [5] stated that the level of emotional exhaustion of nurses correlates with the severity of depression symptoms. Furthermore, A.D. Guastello *et al.* [6] demonstrated that among all the predictors of increased burnout, symptoms of depression and anxiety are identified, which complement the influence of other factors. However, the authors conducted a general comparative assessment and did not consider socio-demographic, and professional factors, as well as the conditions of social life and crisis events. Crisis events have a significant impact on the mental health of nurses, acting as additional stressors for the development of professional burnout. War is considered one of the most pronounced crises [7].

To date, few studies highlight the impact of the Russian-Ukrainian war, as well as the specifics of medical care and military care, on the state of professional burnout of nurses. Only a few reports indicate that depression, combined with emotional exhaustion, is on the rise among Ukrainians in both frontline and rear regions [8]. In this regard, to ensure the quality performance of professional duties by nurses, it is advisable to establish the level of professional burnout of nurses working in war conditions in hospitals with military and civilian populations.

The study aimed to identify the main socio-demographic and professional factors that influence the development of professional burnout among inpatient nurses who provide medical care to the military and civilian populations. The objectives of the study were to conduct a comparative assessment of the level of professional burnout depending on socio-demographic and professional characteristics, to establish correlations between the characteristics of professional burnout and these factors, and to identify the leading factors that influence the level of professional burnout.

**♦ MATERIALS AND METHODS**

This study was cross-sectional and included the study of professional burnout of nurses in the departments of

cluster and supercluster healthcare facilities that provide medical care to the military and civilian population of Ternopil, Ivano-Frankivsk and Zaporizhzhia regions and its relationship with socio-demographic, professional and personal factors. The survey was conducted over three months (from 30.10.2023 to 01.02.2024) by filling out a printed questionnaire by nurses of the therapeutic and surgical departments. Based on the results of the survey, a database table was formed and subjected to statistical processing.

The reliability and validity of the instruments used to measure professional burnout were assessed by calculating Cronbach's alpha reliability coefficient. Questionnaires with a Cronbach's alpha greater than 0.75 are considered reliable. The questionnaire used was characterised by a high level of reliability (Cronbach's alpha was  $\alpha=0.95$ ) according to a preliminary test [9]. The criterion for inclusion in the study group was the presence of informed consent from the participants.

The statistical population included 292 inpatient nurses who answered the questionnaire, which included questions of a socio-demographic, professional and organisational nature, as well as 22 questions of the questionnaire by K. Maslach and S. Jackson [9], which is the most adapted to characterise the professional burnout of social workers. Questions of a socio-demographic, professional and organisational nature were added: age; gender; length of service; marital status; presence of children; number of children; position title; departments where nurses work; work of a nurse in a department with military (civilian population); work with wounded (sick) servicemen (permanently, periodically, not working); number of night shifts per month; presence of chronic diseases; completion of courses (lectures) on the peculiarities of communication with the military; completion of advanced training courses in the last 3 years. 22 items grouped into 3 subscales: emotional exhaustion (EE, nine items), depersonalisation (DP, five items) and reduction of personal achievement (PA, eight items). Each item was answered on a 7-point Likert scale ranging from: "never" – 0 points; "several times a year or less" – 1 point; "once a month" – 2 points; "several times a month" – 3 points; "once a week" – 4 points; "several times a week" – 5 points; "daily" – 6 points. The level of burnout for each subscale was set according to the sum of the scores obtained (Table 1).

**Table 1.** Levels of burnout following K. Maslach and S. Jackson

Subscale	Low level (number of points)	Average level (number of points)	High level (number of points)
Emotional exhaustion	0-16	17-26	27 and more
Depersonalisation	0-6	7-12	13 and more
Reduction of personal achievements	39 and more	38-32	0-31

Source: Source: [9]

Statistical analysis of the results was carried out on a personal computer using SPSS version 21 software. Descriptive statistics methods were used to determine the prevalence of the components of professional burnout. Frequency characteristics of the studied traits were described as absolute value (n) and percentage (%). A comparison of frequency indices between groups was performed using Pearson's chi-square ( $\chi^2$ ) test. Comparison of quantitative indicators of the observation groups was carried out by determining the Student's t-test for

independent samples, and in the case of three or more groups, a one-factor analysis of variance with Bonferoni correction was used. Differences between groups were considered significant at  $p < 0.05$ .

Pearson's correlation analysis was conducted to establish the relationship between the level of burnout and socio-demographic, organisational and professional factors. Multiple regression analysis was used to determine the leading factors that influence the development of professional burnout in nurses.

The study was conducted following the principles of good clinical practice and the World Medical Association's Declaration of Helsinki on the Ethical Principles for Scientific Medical Research Involving Human Subjects [10]. All survey participants were informed about how their anonymity is ensured, they know why the survey is being conducted, how the data they provide will be used, and the risks involved. The Bioethics Commission of the Ternopil Gorbachevsky National Medical University of the Ministry of Health of Ukraine certified the compliance of the research with moral and ethical standards (Protocol No. 27 of 29 January 2024).

## RESULTS

The study surveyed 292 nurses working in various departments of cluster and supercluster healthcare facilities providing medical care to the military and civilian population.

Among the respondents, there were 283 women (96.92%) and 9 men (3.08%) (Table 2). The majority (41.43%) of them belonged to the age group under 35. According to marital status, 173 (59.24%) of the respondents were married, and 205 (70.21%) had 1 to 3 children. All the respondents worked in inpatient departments as nurses, with most of them on duty 215 people (73.63%), i.e. they provided direct nursing care to patients. Most of the survey participants were nurses with more than 20 years of work experience – 116 (39.73%). Regarding the patients with whom the study participants worked, 117 (40.06%) were engaged in providing medical care to the military regularly, and 65 (22.26%) worked only with the civilian population. Among the participants, 210 (71.92%) had attended lectures or courses on communication with wounded or sick soldiers, and 183 (62.67%) had taken some kind of advanced training course in the last 3 years.

**Table 2.** Socio-demographic and professional characteristics of nurses (n = 292)

Variable	Variable categories	n (%)	Significance of differences in groups, p
Gender	Male	9 (3.08)	< 0.001
	Female	283 (96.92)	
Age (years)	< 35	121 (41.43)	< 0.001
	35-49	101 (34.59)	
	≥ 50	70 (23.97)	
Marital status	Married (married)	173 (59.24)	< 0.001
	Single (unmarried)	81 (27.74)	
	Divorced (divorced)	38 (13.01)	
Presence of children	Yes	205 (70.21)	< 0.001
	No	87 (29.79)	
Position	Nurse on duty	215 (73.63)	< 0.001
	Manipulative nurse	37 (12.67)	
	Dressing nurse	11 (3.77)	
	Operating room nurse	29 (9.93)	
Service term	> 5	52 (17.80)	< 0.001
	5-10	62 (21.23)	
	11-20	62 (21.23)	
	20 <	116 (39.73)	
Work with wounded (sick) servicemen	Always	117 (40.06)	< 0.001
	Periodically	96 (32.87)	
	Rarely	14 (4.79)	
	Only with civilians	65 (22.26)	
Attendance of courses (lectures) on the specifics of communication with the military	Yes	210 (71.92)	< 0.001
	No	82 (28.08)	
Attendance of advanced training courses in the last 3 years	Yes	183 (62.67)	< 0.001
	No	109 (37.33)	

**Notes:** p-values are obtained using the chi-square test for categorical variables; n, absolute number of observations

**Source:** compiled by the authors

A comparative assessment of the average indicators of the components of professional burnout depending on various socio-demographic and professional characteristics of the group of surveyed nurses was carried out (Table 3). The study determined that females who work as nurses, compared to males, have a 24.1% ( $p=0.213$ ) higher level of EE, 36.3% ( $p=0.190$ ) higher level of DP and 9.2% ( $p=0.164$ ) lower level of RA. As such, the level of EE among nurses under 35 years of age is 30.1% higher compared to nurses aged 50 and older, and 13.2% higher compared to the age

group 35-49 years. In general, a significant difference in EE ( $p=0.017$ ) and RA ( $p=0.035$ ) was found between the age groups. The average values of DP in the group of respondents under 35 and in the group of 35-49 years old are of medium DP level, and in people aged 50 and older – low DP level, although there was no significant intergroup difference in DP levels by age ( $p=0.238$ ). Marital status also influenced the level of manifestation of EE, DP, and RA. Married nurses had the highest EE score, which corresponded to the average level of burnout, and unmarried nurses had

the lowest ( $p=0.032$ ). The highest level of DP was found in unmarried nurses, which, like divorced nurses, was related to the average level of DP by its numerical values. The DP rate for married people was low. Among the characteristics of marital status, RA was most pronounced in unmarried

nurses, whose values, like those of divorced nurses, were related to the average level of RA. In married people, RA was low ( $p=0.046$ ). Nurses who had children had 11.4% higher EE ( $p=0.098$ ), lower DP ( $p=0.419$ ) and significantly lower RA ( $p=0.046$ ).

**Table 3.** Comparative assessment of the average indicators of emotional exhaustion, depersonalisation and reduction of personal achievements depending on the sociodemographic and professional characteristics of nurses (n = 292)

Variable	Variable categories	Emotional exhaustion		Depersonalisation		Reduction of personal achievements	
		M ± SD	Level of confidence, p	M ± SD	Level of confidence, p	M ± SD	Level of confidence, p
Gender	Male	14.66 ± 9.02	0.213	5.56 ± 4.36	0.190	36.33 ± 8.29	0.164
	Female	18.20 ± 12.37		7.58 ± 5.29		39.67 ± 7.46	
Age (years)	< 35	18.13 ± 13.43	0.017	7.19 ± 4.75	0.238	36.60 ± 8.13	0.035
	35-49	16.01 ± 12.82		6.85 ± 4.93		38.24 ± 7.03	
	≥ 50	13.94 ± 11.37		5.50 ± 4.68		39.08 ± 6.78	
Marital status	Married (married)	18.37 ± 11.04	0.032	5.89 ± 5.02	0.263	39.07 ± 7.20	0.046
	Single (unmarried)	14.65 ± 13.24		7.63 ± 5.90		35.65 ± 8.42	
	Divorced (divorced)	16.32 ± 13.32		6.70 ± 5.22		38.83 ± 6.41	
Presence of children	Yes	17.82 ± 13.25	0.098	6.88 ± 5.17	0.419	39.29 ± 7.03	0.046
	No	15.96 ± 13.49		7.02 ± 5.54		37.48 ± 8.42	
Position	Nurse on duty	14.05 ± 12.65	0.012	6.49 ± 4.91	0.001	38.28 ± 7.90	0.278
	Manipulative nurse	22.78 ± 16.26		9.35 ± 6.74		38.73 ± 6.65	
	Dressing nurse	17.39 ± 13.04		3.63 ± 3.72		39.27 ± 6.13	
	Operating room nurse	16.35 ± 12.74		5.64 ± 4.96		40.92 ± 5.36	
Service term	> 5	18.68 ± 14.71	0.027	7.82 ± 6.29	0.122	37.73 ± 8.61	0.267
	5-10	16.09 ± 12.56		6.06 ± 5.37		37.83 ± 7.97	
	11-20	15.58 ± 12.86		5.79 ± 4.68		39.22 ± 7.06	
	20 <	13.91 ± 13.36		5.52 ± 5.06		39.70 ± 6.92	
Work with wounded (sick) servicemen	Always	18.91 ± 14.17	0.035	7.56 ± 5.41	0.214	35.34 ± 6.37	0.001
	Periodically	14.21 ± 11.58		6.57 ± 4.17		38.97 ± 6.77	
	Rarely	11.07 ± 12.82		4.35 ± 4.19		39.76 ± 12.71	
	Only with civilians	16.12 ± 14.17		6.54 ± 6.61		39.43 ± 8.22	
Attendance of courses (lectures) on the specifics of communication with the military	Yes	15.18 ± 13.06	0.041	5.71 ± 5.24	0.275	39.29 ± 7.34	0.050
	No	17.92 ± 13.88		7.48 ± 5.39		36.38 ± 7.76	
Attendance of advanced training courses in the last 3 years	Yes	15.35 ± 13.41	0.101	5.86 ± 5.74	0.316	39.91 ± 7.62	0.670
	No	17.68 ± 13.20		7.97 ± 5.38		38.52 ± 7.12	

**Notes:** p-values for comparison of two groups were obtained by determining the Student's t-test; p-values for comparison of three or more groups were obtained by using one-factor analysis of variance with Bonferroni correction; n, absolute number of observation units; M ± SD, mean value and its standard deviation

**Source:** compiled by the authors

Significant differences in professional burnout among nurses who worked in different positions and performed different tasks were noted. The highest level of EE was observed in manipulation nurses, lower in dressing and operating room nurses, and the lowest in those on duty at the nursing post ( $p=0.012$ ). The level of DP was also the highest in manipulation nurses and the lowest in dressing nurses ( $p=0.001$ ). Moreover, the average DP values of manipulation and post nurses were of medium

burnout level, and operating and dressing nurses had a low level. There was no significant difference in the RA of nurses depending on their positions, but it was determined that the average value of RA of post and manipulation nurses belongs to the average level of burnout and operating and dressing nurses to the low level of burnout. The results of the questionnaire revealed that EE, DP and RA have the greatest manifestations in nurses with less than 5 years of experience. The level of EE among nurses

with less than 5 years of work experience is 34.3% higher than the level of EE among nurses with more than 20 years of work experience.

The results of the study on the state of professional burnout of nurses who work with the military permanently, periodically or only with the civilian population are important. As determined, the highest values of EE, DP, and RA were determined in nurses who constantly work with wounded or sick military personnel. The numerical values of EE in nurses who constantly work with wounded or sick military personnel are 70.8% higher than those of nurses who rarely work with this patient population, DP by 73.7%, and RA by 12.5%.

The impact of professional development activities, as well as taking a course or listening to lectures on the peculiarities of communication with the military on the state of EE, DP, and RA was analysed. Nurses who attended a course on the peculiarities of communication with the military had significantly lower EE ( $p = 0.041$ ) and RA ( $p = 0.050$ ). Professional development in the form of advanced training courses over the past 3 years has had a significant impact on the components of professional burnout.

A comparative assessment of the prevalence of professional burnout among nurses engaged in regular medical care for the military and those who provide medical care to the military rarely or only to the civilian population has revealed that it has significant differences in terms of severity (Table 4). The high level of EE in nurses who constantly worked with the military was 1.6 times ( $p = 0.038$ ) higher than in nurses who were engaged in providing medical care to civilians and rarely worked with the military, DP by 1.8 times ( $p = 0.007$ ), and RA by 1.9 times ( $p = 0.022$ ). The prevalence of low EE in nurses who constantly worked with the military compared to nurses who provided medical care only to the civilian population was 2.2 times lower ( $p = 0.003$ ), DP 2.2 times lower ( $p = 0.005$ ), and RA 1.7 times lower ( $p = 0.021$ ). There was no significant difference in the prevalence of medium level of professional burnout among these categories of nurses. However, the frequency of medium-level manifestations in nurses who worked with military EE was 1.1 times higher and DP 1.2 times higher. Thus, nurses who worked in the military had high levels of emotional exhaustion, depersonalisation and reduction of personal achievements.

**Table 4.** Burnout rates of inpatient nurses in healthcare facilities providing medical care to military and civilian populations, n (%)

Subscale burnout	Working with military personnel	Low level, p (%)	Average level, p (%)	High level, p (%)
Emotional exhaustion	Constantly, n = 117	18 (15.4)	51 (43.5)	48 (41.1)
	Rarely or only work with civilians, n = 79	27 (34.3)	31 (39.2)	21 (26.5)
	Level of confidence, <i>p</i>	0.003	0.545	0.038
Depersonalisation	Constantly, n = 117	16 (13.7)	56 (47.8)	45 (38.5)
	Rarely or only work with civilians, n = 79	24 (30.4)	39 (40.3)	16 (20.3)
	Level of confidence, <i>p</i>	0.005	0.837	0.007
Reduction of personal achievements	Constantly, n = 117	24 (20.5)	56 (47.9)	37 (31.6)
	Rarely or only work with civilians, n = 79	28 (35.4)	38 (48.1)	13 (16.5)
	Level of confidence, <i>p</i>	0.021	0.911	0.022

**Notes:** p-value for comparison of two groups was obtained by determining the Student's t-test; n-absolute number of observation units

**Source:** compiled by the authors

The correlation analysis revealed the main categorical and continuous variables of socio-demographic, professional, organisational and personal characteristics that have interrelations with the development of professional burnout in nurses during martial law (Table 5). Emotional exhaustion is characterised by significant correlations with age, nurse's position, length of service, the contingent of patients in whose care the nurse is involved, the number of night shifts for one month, the number of children, the length of time the nurse has worked in the military unit,

the presence of chronic diseases, and courses (lectures) on the specifics of communication with the military. Depersonalisation is determined by reliable correlations with length of service, number of night shifts for one month, and the presence of chronic diseases. The reduction of personal achievements is characterised by significant correlations with age, nurse position, length of service, presence of children, length of service in the military unit, and completion of courses (lectures) on the specifics of communication with the military.

**Table 5.** Correlations between indicators of professional burnout and socio-demographic, organisational and professional characteristics of nurses

Characteristics		Emotional exhaustion	Depersonalisation	Reduction of personal achievements
Age	The correlation coefficient, <i>r</i>	-,151	-,071	,135
	<i>P</i>	,005	,114	,011
Gender	Correlation coefficient, <i>r</i>	,020	,013	,082
	<i>P</i>	,366	,415	,082
Position	Correlation coefficient, <i>r</i>	,157	,036	,111
	<i>P</i>	,006	,271	,030

Table 5. Continued

Characteristics		Emotional exhaustion	Depersonalisation	Reduction of personal achievements
Service term	Correlation coefficient, <i>r</i>	-,147	-,103	,099
	<i>P</i>	,008	,010	,046
The contingent of patients	The correlation coefficient, <i>r</i>	-,129	-,070	-,062
	<i>P</i>	,014	,116	,147
Number of night shifts per month	The correlation coefficient, <i>r</i>	,181	,183	-,061
	<i>P</i>	,001	,001	,149
Marital status	The correlation coefficient, <i>r</i>	,012	,003	-,009
	<i>P</i>	,419	,483	,438
Presence of children	The correlation coefficient, <i>r</i>	-,039	-,012	,110
	<i>P</i>	,253	,421	,030
Number of children	The correlation coefficient, <i>r</i>	,122	,036	,041
	<i>P</i>	,041	,303	,282
Duration of work in the branch with military personnel	The correlation coefficient, <i>r</i>	,123	,023	,215
	<i>P</i>	,015	,347	,000
Presence of chronic diseases	The correlation coefficient, <i>r</i>	,293	,244	,049
	<i>P</i>	,000	,000	,204
Attendance of courses (lectures) on the peculiarities of communication with the military	The correlation coefficient, <i>r</i>	,112	,065	-,114
	<i>P</i>	,038	,134	,026
Attendance of advanced training courses in the last 3 years	The correlation coefficient, <i>r</i>	,030	,006	-,025
	<i>P</i>	,304	,456	,335

Notes: *r*-value of the correlation coefficient; *p*-level of reliability of correlations between indicators

Source: compiled by the authors

Multivariate linear regression analysis using a generalised indicator of nurses' burnout as a dependent variable (Table 6) the main characteristics that affect the level of

burnout are identified. The regression model covers most of the factors that influence the level of professional burnout ( $R^2 = 0.767$ ).

Table 6. Results of multiple regression analysis of medical students' performance with indicators of trauma, depression, anxiety and stress

Predictor	Non-standard coefficients		Standard coefficients, $\beta$	p-value
	B	Standard error, B		
Constant	35.392	7.076		0.000
Presence of chronic diseases	-11.883	1.794	-,440	0.000
Presence of children	7.844	3.526	,238	0.027
Age	-3.880	1.761	-,216	0.029
Number of night shifts per month	-,721	,256	-,191	0.005
Service term	-2.925	1.725	-,187	0.042

Notes: B – unstandardised regression coefficient;  $\beta$  – standardised regression coefficient;  $R=0.876$ ;  $R^2=0.767$ ;  $F=6.959$

Source: compiled by the authors

The obtained model showed that the presence of chronic diseases, age, length of service, the number of night shifts worked during the month, as well as the presence of children have a high level of reliability in influencing the development of professional burnout among nurses during the war. Thus, when planning and implementing measures to prevent professional burnout among nurses during war-time who provide medical care to the military and civilian population, the intervention groups should primarily include young nurses under 35 years of age, with up to 5 years of work experience, children, chronic diseases, and those who often work night shifts. Among the measures to prevent professional burnout, it is imperative to conduct

classes on the specifics of communication with wounded soldiers undergoing treatment in hospital departments.

DISCUSSION

The study found that nurses who are constantly involved in the provision of medical care to the military were diagnosed with high and 43.5% of cases of EE, 38.5% of cases of high and 47.8% of cases of DP, 31.6% of cases of high and 47.9% of cases of RA. Among inpatient nurses who rarely work with military personnel or work only with civilians, a high level of EE was found in 26.5%, DP in 20.3%, and RA in 16.5%.

Depending on the complexity and level of healthcare provision in different countries, researchers note different

levels of professional burnout among nurses. For instance, in private clinics in Ethiopia, where 56.8% and 56.3% had high levels of EE and DP, respectively, and 56.3% had low levels of PA. The prevalence of EE, DP, and RA among nurses in palliative care facilities was 19.5%, 9.3%, and 8.2%, respectively [11]. Nurses who worked during the COVID-19 pandemic had higher levels of EE but lower DP and RA compared to psychiatric nurses, primary care nurses, oncology nurses, paediatric nurses, and emergency nurses [12]. S. Yang *et al.* [13] determined that the denotative indicator of the level of professional burnout is the EE subscale. The results of the study by G. Hur *et al.* [12] point out the correlation between the level of professional burnout of nurses and the complexity of the work performed in the department and job responsibilities.

The comparative analysis revealed that the highest level of EE and DP among nurses of healthcare facilities providing medical care to the military and civilian population was determined by nurses responsible for performing medical manipulations, and the highest level of RA in post and manipulation nurses. The level of professional burnout depends on the departments in which nurses work. Thus, according to the research of M. Al Maqbali *et al.* [14], conducted in the United States, 61% of intensive care unit workers experienced EE, 44% had symptoms of DP, and 50% experienced RA. Researchers also link the development of professional burnout to various types of stress. This is especially relevant during the war, when most employees, like the entire population of Ukraine, are under constant stress. Researchers [15] believe that 58.43% of respondents had a high level of stress in the development of professional burnout among intensive care unit nurses.

An important component of the study of professional burnout is the establishment of relationships between the level of professional burnout or its components and socio-demographic, professional or organisational factors. The correlation analysis revealed no significant relationship between gender and the level of professional burnout. The same data was obtained by other researchers in Portugal, Brazil, the USA and Greece [16].

Professional burnout in nurses has a close relationship with age. The correlation analysis of the conducted studies revealed that the age of nurses has a significant inverse correlation with EE ( $p=0.005$ ) and a direct correlation with RA ( $p=0.011$ ). This may be since young people are more professionally active, overusing their energy and commitment.

Studies have shown that professional burnout depends on the length of service of employees [17]. According to the data obtained, EE and DP have an inverse significant correlation with seniority, and RA has a significant direct correlation. This is supported by other researchers who explain the higher incidence of burnout among younger workers by the fact that they are more likely to take on more professional responsibilities, focus on maintaining high-quality services and seek solutions to nursing problems without having the relevant experience. On the other hand, it is believed that the longer the length of service in the profession, the lower the level of impartiality in professional relationships [4].

Many researchers have shown that nurses with families have a significantly higher tendency to experience professional burnout than single nurses, which the authors

explain by the additional burden of household responsibilities and emotional involvement in their family's affairs. These findings are also confirmed by a meta-analysis of 78 studies on the impact of socio-demographic factors on the occurrence of professional burnout syndrome [18].

The research also confirms a higher level of EE in married nurses ( $p=0.032$ ) compared to unmarried nurses. However, no significant correlations between the marital status of nurses and the level of professional burnout were found. However, there are significant correlations between the level of RA and the presence of children in nurses ( $p=0.030$ ), and it was found that the number of children in nurses is characterised by a significant correlation with the level of EE ( $p=0.041$ ). Many literature sources indicate the influence of psychological factors on nurses' burnout [12, 19], because nurses are more likely to face psychological problems than other healthcare workers, and this situation is more difficult for them [20, 21]. The analysis of the studies showed that insomnia and perception of one's health as poor were positively correlated with burnout, while psychological resilience was negatively correlated with EE.

According to the data, both emotional exhaustion and depersonalisation have a significant direct correlation with the frequency of night shifts during the month. Among the causes of professional burnout associated with night work, researchers point out that working the night shift disrupts a person's circadian cycle, rest and sleep. Those who work night shifts must sleep during the day when there is no way to get a deep and quality sleep. This affects the physiological balance of a person [22]. Among the existing studies, insufficient attention has been devoted to the relationship between professional burnout and nurses' chronic diseases and health status in general. The correlation analysis confirmed direct correlations of EE ( $p=0.000$ ) and DP ( $p=0.000$ ) with existing chronic diseases with a high level of confidence. As a result of the conducted research, a multiple regression analysis model was obtained, according to which it was determined that the main group of factors influencing the development of professional burnout includes age, length of service, presence of children, number of night shifts worked during the month, and the presence of chronic diseases in nurses. In this regard, these factors should be addressed when planning and developing measures to prevent professional burnout of nurses.

## ✦ CONCLUSIONS

Nurses who are constantly involved in providing medical care to the military in inpatient departments have a high level of emotional exhaustion at 41.1%, depersonalisation at 38.5%, and a reduction in personal achievements at 31.6%, which is significantly higher than the data on the components of burnout of nurses who are involved in providing medical care only to the civilian population. The professional burnout of inpatient nurses who are constantly engaged in the provision of medical care and work in healthcare facilities that provide medical care to the military and civilian population is associated with many socio-demographic, professional and organisational factors. Among these factors, nurses' professional burnout is significantly correlated with nurses' age, length of service, duration of work with wounded (sick) military personnel,

work experience, presence of chronic diseases, and married nurses with children. According to the results of multiple regression analysis, it was found that the main factors that have a decisive influence on the development of professional burnout in nurses during the war include age, length of service, presence of children, the number of night shifts worked during the month, and the presence of chronic diseases in nurses. These factors determine the level of professional burnout in 76.7% of cases. Providing additional courses for nurses on the specifics of communication with wounded soldiers helps to reduce the level of emotional exhaustion and reduce personal achievements, which reduces the impact of various factors on the development of professional burnout. The results of the research can be used to develop methods for preventing professional burnout in

nurses involved in providing medical care to the military, as well as to develop a strategy for managing a healthcare facility to improve the provision of healthcare services. Prospects for further research in this area are to develop and scientifically substantiate effective intervention measures aimed at reducing and preventing professional burnout among nurses providing medical care to the military and civilian population during the war.

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#### ✦ CONFLICT OF INTEREST

The authors declare no conflict of interest.

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## Особливості професійного вигорання медичних сестер стаціонарів в умовах війни

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**Анотація.** Професійне вигорання серед медсестер стаціонарів, які надають медичну допомогу пораненим військовим є значною проблемою для закладів охорони здоров'я, оскільки негативно впливає на якість надання медичної допомоги та потребує додаткового вивчення для розробки профілактичних заходів на особистісному та груповому рівні щодо його попередження. Метою дослідження було провести порівняльну оцінку професійного вигорання медичних сестер стаціонарів, які надають медичну допомогу військовим та цивільному населенню. Проведено анкетування 292 медичних сестер відділень стаціонарів. Рівень професійного вигорання встановлювали згідно опитувальника К. Маслач і С. Джексона. З метою визначення провідних чинників, які впливають на розвиток професійного вигорання у медсестер, застосовували кореляційно-регресійний аналіз. Встановлено, що високий рівень емоційного виснаження у медсестер, які постійно працювали з військовими у 1,6 разу ( $p = 0,038$ ) переважав такий у медсестер, які були зайняті наданням медичної допомоги цивільним та рідко працювали з військовими, деперсоналізації в 1,8 разу ( $p = 0,007$ ), а редукції особистих досягнень в 1,9 разу ( $p = 0,022$ ). Застосуванням багатофакторного лінійного регресійного аналізу встановлено, що наявність хронічних захворювань, вік, стаж роботи, кількість відпрацьованих нічних змін протягом місяця, а також наявність дітей з високим рівнем статистичної значущості впливають на розвиток у медичних сестер в період війни професійного вигорання. Проведення з медичними сестрами заходів у формі курсів або лекцій, направлених на покращення комунікативних компетентностей сприяє зниженню рівня професійного вигорання

**Ключові слова:** медичні працівники; чинники здоров'я; медична допомога військовим; емоційне виснаження; регресійний аналіз