



Strategies for coping with stress, emotional control, and occupational burnout among surgical nurses

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Abstract

Introduction and Objective. Nursing staff constitute 59% of the total number of health care workers worldwide – a total of 27.9 million people. The aim of the study is assessment of the prevalence of stress, including strategies for coping with stress, emotional control, and occupational burnout syndrome, as well as the effect of chronic stress on occupational burnout among surgical nurses.

Materials and Method. The study included 323 surgical nurses employed in hospitals in the Kielce Province, Poland. Applying the inclusion and exclusion criteria from the study, ultimately, 110 nurses participated in the project. The research tools were standardized questionnaires: PSS-10 (Scale of Experienced Stress), Mini-COPE (Coping Orientations to Problems Experienced), CECS (Courtauld Emotional Control Scale), and LBQ (Link Burnout Questionnaire).

Results. The highest mean level of occupational burnout observed was related with the scale of psychophysical exhaustion (raw values: 17.49 ± 5.46, stens: 5.53 ± 1.53), whereas the lowest mean result was related with the scale of the feeling of the lack of professional effectiveness (raw values: 13.16 ± 3.82, stens: 5:52 ± 1.65). While analyzing the relationships between the results of LBQ concerning psychophysical exhaustion and the results according to the PSS-10 and Mini-Cope scales, a statistically significant correlation was observed with the result of the PSS-10 ($p < 0.001$), concerning both raw and sten results.

Conclusions. Stress is an important factor in the occurrence of the symptoms of occupational burnout in the work of surgical nurses. Two-fifths of scrub nurses experienced a high level of stress. A relationship was found between the feeling of lack of professional effectiveness and anxiety control. Persons who experienced a low own effectiveness strongly suppressed the feeling of anxiety.

Key words

emotions, nurses, occupational stress, burnout syndrome, work environment

INTRODUCTION

A surgical nurse (scrub nurse) is a member of a surgical team who deals with highly specialist care. A nurse may become a scrub nurse after proper training, completion of a qualification course and passing a specialization examination [1]. The operating theatre is one of the most crucial places in a hospital, where the psychophysical condition of the staff is of prime importance.

Stress at work is most frequently of a chronic character, and when occurring in appropriate intensity and frequency it contributes to the development of the occupational burnout syndrome. Stress causes a discrepancy between

work conditions and the requirements of the employees, and their abilities to cope with emotional tension. Employees perceive this discrepancy as a threat to own health or own integrity. Stress may be the cause of occurrence of diseases on the psychological and somatic background [2, 3, 4].

According to the WHO, occupational burnout is a phenomenon correlated with chronic occupational stress, characterized by an increased feeling of exhaustion of life energy, lack of mental distance from work, manifesting negativity or cynicism related with the work performed, which leads to reduced professional effectiveness [5]. It seems that among all groups of health care employees, surgical nurses are those most exposed to stress. A similar level of stress occurs among physicians with surgical specialities and the remaining nurses working in surgical and emergency units. In such places, time and precision frequently decide about therapeutic success [6].

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Nursing staff constitute 59% of the total number of health care workers worldwide – a total of 27.9 million people [7]. Therefore, the evaluation and subsequent care for the condition and professional usefulness of nurses are extremely important.

OBJECTIVE

The aim of the study is assessment of the prevalence of stress, including strategies of coping with stress, emotional control, and occupational burnout syndrome, as well as the effect of chronic stress on occupational burnout among surgical nurses.

MATERIALS AND METHOD

The study was conducted from October 2019 – August 2020, and covered 323 surgical nurses employed in operating theatres in hospitals in the Kielce Province of Poland. The criteria of inclusion into the study were: fulfilment of duties of a surgical nurse, period of employment of at least 5 years, completed 30 years of age, whereas the criteria of exclusion were: nurses working in bed units, period of employment less than 5 years, age under 30, and nurse anaesthetists. Finally, 110 surgical nurses participated in the study. The development of the SARS-CoV-2 pandemic exerted a considerable effect on the size of the examined group, considering the epidemiological regulations in effect at that time, including quarantine, isolation, and staff illnesses. The majority of the surgical nurses in the study had Master's Degree education (53.6%, $N = 59$), 54.5% of females ($N = 60$) possessed specialization – the largest number of them had Master's Degree ($N = 40$), mean age – 46.93, and mean period of employment – 23.9?

Consent for the study was obtained from the Bioethical Committee at the Jan Kochanowski University in Kielce (Resolution No. 7/2019, 22 January 2019).

The study method was a diagnostic survey, the technique – an auditorium survey. Research tools were standard questionnaires from the Laboratory of Psychological Tests at the Polish Psychological Association: PSS-10 (Scale of Experienced Stress) for the assessment of stress experienced. The questionnaire consists of 10 items concerning various subjective feelings related with problems, personal events, behaviour and methods of coping with them [8]; Mini-COPE (Coping Orientations to Problems Experienced) is part of the *Stress Measurement and Stress Coping Tools* collection and consists of 28 statements included in 14 strategies [8]; CECS (*Courtauld Emotional Control Scale*) allows obtaining the result of an overall emotional control and the result of 3 subscales regarding anger control, depression control and anxiety control [9]; LBQ (*Link Burnout Questionnaire*) for the assessment of 4 scales of occupational burnout: psychophysical exhaustion, lack of engagement in relations with the patient, lack of the feeling of professional effectiveness and disappointment [10].

The results of the study obtained were analyzed using: percentage distribution, mean value, median, standard deviation (SD), values of the first and third quartiles (IQR), Spearman's correlation coefficient, and the strength of correlation was classified according to Joy Guilford.

The level of significance was set at $p = 0.05$, indicating also statistically significant results for the levels $p = 0.01$ and $p = 0.001$. In the case of $p < 0.001$, the notation $p < 0.001$ was always used.

RESULTS

Results of the PSS-10 questionnaire. The degree of intensity of stress was analyzed using the PSS-10. The results obtained by the surgical nurses ranged from 6 – 33 scores, which was equivalent to 3 – 10 stens. Mean value according to the PSS for the total number of nurses – 18.35 ± 5.81 , mean value of sten standards – 6.11 ± 1.79 (Tab. 1).

Table 1. Descriptive statistics of raw and sten values according to the PSS-10

Variable	Parameter	Total (n = 110)
PSS-10 (raw values)	n	110
	Mean (SD)	18.35 (5.81)
	Median (IQR)	18 (14–22)
	Range	6–33
PSS-10 (stens)	n	110
	Mean (SD)	6.11 (1.79)
	Median (IQR)	6 (5–7)
	Range	3–10

A high level of intensity of stress was experienced by 40.0% of the surgical nurses in the study, the mean level – by 39.1%, and a low level of stress concerned 20.9% of respondents.

Results according to the Mini-COPE questionnaire. While analyzing the results of the Mini-COPE the highest mean results of surgical nurses were obtained for strategies of coping with stress by active coping (2.33 ± 0.52) and planning (2.2 ± 0.55), whereas the lowest results concerned usage of psychoactive substances (0.28 ± 0.46), and the sense of humour (0.7 ± 0.57) (Fig. 1).

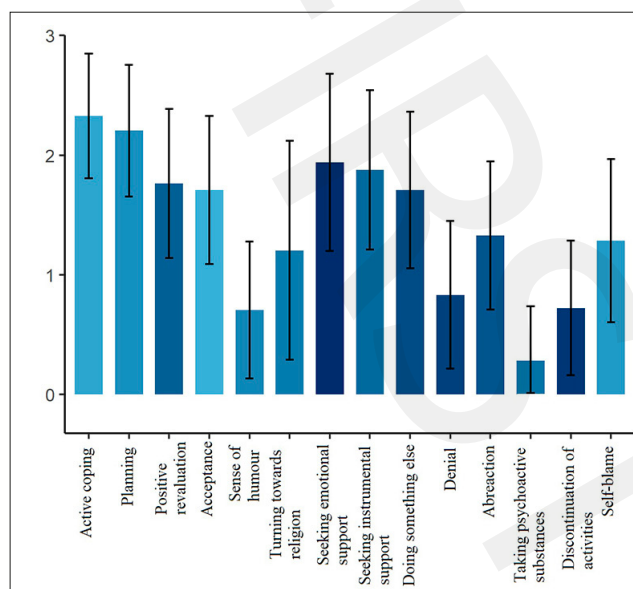


Figure 1. Mean results of answers for individual strategies according to the Mini-COPE scale

Results of emotional control according to the CECS.

Examination using the CECS questionnaire allowed obtaining information about 3 subscales, each one containing 7 statements concerning anger, depression and anxiety. The results obtained by the surgical nurses ranged from 7 – 28 scores depending on the subscale. The highest mean result was obtained for the subscale for control of emotions – anxiety (17.59 ± 4.41), while the lowest for the subscale for control of emotions – anger (16.5 ± 4.11). The overall index of emotional control in surgical nurses was within the range 27 – 77 scores. The mean result was 51.0 ± 29.86 , which was close to the median value – 51.5. A half of the examined group obtained results from 42.25 – 57 scores (Tab. 2).

Table 2. Descriptive statistics according to the CECS

Variable	Parameter	Total (N = 110)
	N	110
Anger	Mean (SD)	16.55 (4.11)
	Median (IQR)	17 (14–19)
	Range	7–28
	n	110
Depression	Mean (SD)	16.88 (3.89)
	Median (IQR)	17 (14–19)
	Range	7–27
	n	110
Anxiety	Mean (SD)	17.59 (4.41)
	Median (IQR)	18 (15.25–20)
	Range	7–27
	n	110
Overall index of emotional control	Mean (SD)	51.02 (9.86)
	Median (IQR)	51.5 (45.25–57)
	Range	27–77
	n	110

Results of the LBQ. Analysis of answers in the LBQ questionnaire showed that raw results ranged from 6 – 33 scores according to the scale. None of the examined nurses obtained a maximum result of occupational burnout. The highest mean result of occupational burnout obtained by all nurses in the study was related with the scale of psychophysical exhaustion (raw results: 17.49 ± 5.46 , stens: 5.53 ± 1.53), whereas the lowest result was related with the scale of the lack of professional effectiveness (raw values: 13.16 ± 3.82 , stens: 5.52 ± 1.65). In the case of each of 4 scales of the LBQ, the largest group were surgical nurses with mediocre results, evidencing the possibility of occurrence of only some problems associated with occupational burnout. The largest number of results demonstrating a high level of occupational burnout was observed according to the scale of disappointment (11.8%, $n = 13$), while the smallest number in the case of the lack of engagement in relations with the patient (5.5%, $n = 6$). While comparing groups with low results showing the lack of occupational burnout, the largest number of surgical nurses was related with the scale of the lack of engagement in relations with the patient (14.5%, $n = 16$) (Tab. 3).

Analysis of the effect of stress on occupational burnout. Analysis of the relationship between the results of the LBQ concerning psychophysical exhaustion, and the results of

Table 3. Classification of results in stens according to the LBQ scales

Variable	Parameter	Total (n = 110)
Psychophysical exhaustion	Low results	8.2% (n = 9)
	Mediocre results	82.7% (n = 91)
	High results	9.1% (n = 10)
Lack of engagement in relations with the client patient	Low results	14.5% (n = 16)
	Mediocre results	80.0% (n = 88)
	High results	5.5% (n = 6)
Feeling of lack of professional effectiveness	Low results	8.2% (n = 9)
	Mediocre results	80.9% (n = 89)
	High results	10.9% (n = 12)
Disappointment	Low results	12.7% (n = 14)
	Mediocre results	75.5% (n = 83)
	High results	11.8% (n = 13)

the PSS-10 and Mini-Cope scales, showed a statistically significant correlation with the result according to the PSS-10 scale ($p < 0.001$), concerning both raw and sten results. In such cases, the coefficient assumed a positive value, and the correlation was mediocre. This means that the results concerning intensification of the experienced stress increased together with an increase in results pertaining to psychophysical exhaustion (Tab. 4).

Table 4. Correlations between results concerning psychophysical exhaustion (LBQ scale), and results according to PSS-10 and Mini-COPE scales

Variable	Spearman's Rho	p-value	Spearman's Rho	p-value
	Raw values		Stens	
PSS-10 (raw values)	0.41	<0.001	0.394	<0.001
PSS-10 (stens)	0.399	<0.001	0.383	<0.001
Active coping	-0.039	0.682	-0.026	0.787
Planning	0.18	0.059	0.15	0.119
Positive reevaluation	-0.062	0.523	-0.077	0.424
Acceptance	0.15	0.117	0.134	0.163
Sense of humour	-0.019	0.844	-0.015	0.879
Turning towards religion	0.005	0.962	-0.009	0.929
Seeking emotional support	-0.002	0.982	-0.008	0.936
Seeking instrumental support	-0.055	0.567	-0.081	0.403
Doing something else	0.091	0.344	0.055	0.568
Denial	-0.009	0.922	-0.023	0.813
Abreaction	0.036	0.706	0.041	0.673
Taking psychoactive substances	0.01	0.917	0.005	0.959
Discontinuation of activities	0.079	0.412	0.093	0.335
Self-blame	0.087	0.366	0.072	0.454

Analysis of the occurrence of the relationships between the results concerning the lack of engagement in relations with the client patient (raw values, stens), and results according to the PSS-10 and Mini-COPE scales, demonstrated a statistically significant relationship between the parameter PSS-10 ($p < 0.001$), and self-blame ($p < 0.05$). In both cases, a positive correlation was observed. The correlation with the PSS-10 was mediocre, while self-blame was low (Tab. 5).

Table 5. Correlations between results concerning lack of engagement in relations with the client patient (LBQ scale), and results according to the PSS-10 and Mini-COPE

Variable	Spearman's Rho	p-value	Spearman's Rho	p-value
	Raw values		Stens	
PSS-10 (raw values)	0.364	<0.001	0.358	<0.001
PSS-10 (stens)	0.368	<0.001	0.359	<0.001
Active coping	-0.084	0.382	-0.072	0.454
Planning	-0.155	0.106	-0.128	0.182
Positive reevaluation	-0.075	0.438	-0.092	0.34
Acceptance	0.02	0.838	0.027	0.78
Sense of humour	0.079	0.413	0.069	0.471
Turning towards religion	-0.095	0.325	-0.082	0.396
Seeking emotional support	-0.041	0.669	-0.068	0.48
Seeking instrumental support	-0.003	0.975	0.001	0.988
Doing something else	-0.072	0.452	-0.067	0.49
Denial	0.184	0.054	0.171	0.074
Abreaction	0.11	0.254	0.141	0.141
Taking psychoactive substances	0.036	0.706	0.047	0.624
Discontinuation of activities	0.162	0.09	0.151	0.114
Self-blame	0.192	0.045	0.217	0.022

Analysis of the relationship between occupational burnout determined by the lack of professional effectiveness, and the result according to the PSS-10, showed statistically significant correlations both for raw values ($p < 0.05$), and sten values ($p < 0.01$). In this case, the correlation coefficient was positive. Here, 3 statistically significant relationships may be observed between the LBQ scale concerning the feeling of lack of professional effectiveness, and strategies in the Mini-COPE questionnaire related with: active coping ($p < 0.05$), planning ($p < 0.010$), and discontinuation of activities ($p < 0.001$). The first 2 strategies concerning active coping and planning assumed negative values of the Spearman's coefficient, which indicates that together with an increase in the results for these strategies the nurses showed lower results of occupational burnout concerning the lack of professional effectiveness. These correlations were weak. However, the last relationship pertaining to the discontinuation of activities, demonstrated a positive correlation of a mediocre strength, i.e. an increase in the results of this strategy was accompanied by an increase in the results of the feeling of the lack professional effectiveness (Tab. 6).

For the results according to the PSS-10 and discontinuation of activities (Mini-COPE), positive correlations with the disappointment scale (LBQ) were statistically significant. The strength of the first of these relationships was mediocre, whereas the strength of the second was weak. However, the results concerning positive reevaluation, turning towards religion, seeking emotional support, seeking instrumental support of the Mini-COPE inventory – negative correlations with the scale of occupational burnout LBQ, occurred to be statistically significant. The strength of the first 3 relationships was weak, while the strength of the last relationship was mediocre (Tab. 7).

Table 6. Correlations between results concerning the feeling of lack of professional effectiveness (LBQ scale), and results according to PSS-10 and Mini-COPE scales

Variable	Spearman's Rho	p-value	Spearman's Rho	p-value
	Raw values		Stens	
PSS-10 (raw values)	0.236	0.013	0.222	0.02
PSS-10 (stens)	0.262	0.006	0.252	0.008
Active coping	-0.241	0.011	-0.249	0.009
Planning	-0.285	0.003	-0.287	0.002
Positive reevaluation	-0.133	0.167	-0.154	0.108
Acceptance	0.054	0.572	0.026	0.79
Sense of humour	0.065	0.499	0.053	0.583
Turning towards religion	-0.007	0.944	-0.036	0.706
Seeking emotional support	-0.076	0.43	-0.073	0.449
Seeking instrumental support	-0.139	0.148	-0.153	0.11
Doing something else	0.059	0.543	0.078	0.421
Denial	0.155	0.105	0.154	0.107
Abreaction	-0.049	0.614	-0.032	0.738
Taking psychoactive substances	0.045	0.637	0.005	0.96
Discontinuation of activities	0.411	<0.001	0.37	<0.001
Self-blame	0.173	0.071	0.157	0.101

Table 7. Correlations between results concerning disappointment (LBQ scale), and results according to the PSS-10 and Mini-COPE scales

Variable	Spearman's Rho	p-value	Spearman's Rho	p-value
	Raw values		Stens	
PSS-10 (raw values)	0.478	<0.001	0.446	<0.001
PSS-10 (stens)	0.493	<0.001	0.463	<0.001
Active coping	-0.071	0.459	-0.083	0.391
Planning	0.03	0.752	0.026	0.788
Positive reevaluation	-0.192	0.044	-0.178	0.062
Acceptance	-0.066	0.493	-0.062	0.52
Sense of humour	-0.099	0.304	-0.091	0.343
Turning towards religion	-0.203	0.033	-0.223	0.019
Seeking emotional support	-0.213	0.026	-0.189	0.048
Seeking instrumental support	-0.307	<0.001	-0.31	<0.001
Doing something else	-0.08	0.407	-0.083	0.388
Denial	-0.033	0.734	-0.034	0.728
Abreaction	-0.107	0.265	-0.124	0.198
Taking psychoactive substances	0.106	0.27	0.08	0.406
Discontinuation of activities	0.251	0.008	0.237	0.013
Self-blame	0.101	0.295	0.095	0.323

DISCUSSION

Occupational burnout frequently occurs in professions biased towards contacts with people, especially in the medical professions additionally associated with great responsibility for the activities undertaken [11, 12]. A study conducted in Austria demonstrated an intensification of the symptoms of occupational burnout in more than 30% of medical staff. In this study occupational burnout was associated with

psychophysical exhaustion in 27.2% of respondents, with intensification of indifference towards the patient – in 10%, and with a lowering of labour standards in 3.2% [13]. In turn, a study carried out in Portugal showed very high levels of emotional exhaustion and lack of professional effectiveness of the nursing staff – 59% and 41%, respectively [14]. According to the results of a study conducted in Southern France concerning the staff of emergency units, emotional exhaustion and depersonalization were reported as the main components of burnout by 15.8% and 29.6% of respondents. The frequency of occupational burnout defined in this way was 34.6%. Medical staff was much more affected by burnout, compared to the group of non-medical workers. More than a half of nurses showed burnout (50.7%) described by the phenomenon of depersonalization [15]. In the analysis of the relationship between the occurrence of occupational burnout syndrome and stressors, the 2 main factors independently related with occupational burnout were work load and psychological overload [15, 16]. Studies carried out in several European countries indicated that occupational burnout concerned approximately 50% of medical doctors, and was most often related with psychophysical overload and depersonalization [10, 9, 16]. Studies conducted in various parts of the world confirmed that the majority of the symptoms of occupational burnout concern primarily psychophysical overload [15, 16, 17, 18].

The presented study conducted in selected medical centres in the Kielce Province of Poland confirms the existing worldwide problem of occupational burnout among nursing staff. While analyzing the results of the LBQ test for the scale of the feeling of the lack of professional effectiveness, the obtained results were on a mediocre level – 80.9%, and on a high level – 10.9%. Similar results were obtained for the scale of psychophysical exhaustion – 82.7% of respondents obtained mediocre results, and 9.1% – high result. According to the LBQ, disappointment on a mediocre level was noted in 75.5% of nurses, while in 11.8% – on a high level. In the case of analysis of the subscale concerning the lack of engagement in relations with patients, mediocre results were obtained for 80% of respondents, whereas for 5.5% – high results. Mediocre results evidence the possibility of the occurrence of certain problems related with occupational burnout. High results indicate a high level of occupational burnout [10]. In the presented study, the dominant group of surgical nurses (80%, on average) may show certain problems related with occupational burnout, whereas one in 10 respondents had the syndrome of occupational burnout.

The use of the PSS-10 demonstrated a high level of experienced stress in 40% of the examined nurses. Mediocre loading with stress was declared by 39.1% of respondents, whereas low loading by 20.9%. The Mini-COPE was used for the assessment of the applied techniques of coping with stress. In the case of the occurrence of stress response, the examined surgical nurses declared that they cope with stress by active coping, planning, seeking emotional and instrumental support. In the stressful situation in the work environment, the nurses examined using the CECS showed a tendency towards suppressing negative emotions. Fear was the most suppressed, while the feeling of anger – the least suppressed. Nevertheless, all 3 scales of anger, depression, and anxiety showed the phenomenon of suppression of emotions.

A significant relationship was observed between anxiety control and the feeling of lack of professional effectiveness

according to the LBQ. An increase in the results for the feeling of the lack of professional effectiveness was accompanied by an increase in the results related with suppression of negative emotion – anxiety. According to the literature, suppression of anxiety and negative emotions, in general, is a symptom of occupational burnout [12, 19, 20, 21, 22, 23]. Own analyses confirmed the thesis that the feeling of occupational burnout increases together with an increase in the level of stress (a significant relationship between the experienced stress (PSS-10) and each of the subscales of the LBQ). The phenomenon of the effect of stress on the development of the syndrome of occupational burnout has been confirmed by many scientific reports [19, 21, 22, 24, 25].

Analysis of the results of the Mini-COPE performed in the current study revealed differences in the methods of coping with stress with reference to individual subscales of the LBQ. In the case of psychophysical burnout, respondents applied the method of planning. Together with an increase in psychophysical exhaustion the nurses more often used planning as the method of coping with stress. Nurses who did not engage in contacts with patients most often had the feeling of guilt, and simultaneously denied such behaviours. It may be noted that a high level of stress in nurses resulted in a decrease in their engagement in relations with patients, and involved the phenomenon of denial and self-blame.

While analyzing the methods of coping with stress in the case of occupational burnout described by the lack of professional effectiveness, such strategies may be distinguished as active coping and planning, as well as discontinuation of activities. In the case of active coping and planning, the correlations were negative, whereas with respect to the discontinuation of activities, occupational burnout increased together with an increase in the use of this technique. The results of the study concerning disappointment according to the LBQ scale in correlation with the results of the Mini-COPE scale, indicated a positive effect of such techniques of coping with stress as turning towards religion, positive reevaluation, seeking emotional and instrumental support. A positive correlation was observed in the case of disappointment and discontinuation of activities, which means that the greater the disappointment, the more the respondents lost activity and became indifferent.

Limitations of the study. The presented study has some limitations. Firstly, the second half of the period of conducting the study fell within the period of the SARS-CoV-2 pandemic, which exerted a considerable effect on the size of the examined group, taking into account, among other things, illnesses, quarantine or isolation of the nursing staff qualified for the study. Secondly, due to the work load, as well as emotional load resulting from the SARS-CoV-2 pandemic, a part of the nursing staff resigned from participation in the study. Thirdly, the epidemiological regulations in effect at that time contributed to hindered contact with persons qualified for participation in the study for collection of the questionnaires.

CONCLUSIONS

- 1) In the work of surgical nurses (scrub nurses), stress is a significant factor in the occurrence of occupational burnout. Two-fifths of these nurses experienced a high level of stress.

2) A relationship was observed between the feeling of lack of professional effectiveness and anxiety control. The nurses who perceived low own effectiveness, strongly suppressed the feeling of anxiety.

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