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NURSES' STRATEGIES FOR DEALING WITH STRESS DURING THE COVID-19 PANDEMIC

Elżbieta Szlenk-Czyczerska[1 A-G]
• ORCID: 0000-0002-8145-6768

Anna Ławnik[2 A-G]
• ORCID: 0000-0001-5849-4398

Adam Szepeluk[2 C]
• ORCID: 0000-0003-0406-3423

[1] Department of Health Sciences, University of Opole, Opole, Poland

[2] Faculty of Health Sciences, Pope John Paul II State School in Biala Podlaska, Poland

A – study design, **B** – data collection, **C** – statistical analysis, **D** – interpretation of data, **E** – manuscript preparation, **F** – literature review, **G** – sourcing of funding

ABSTRACT

Background: In view of the SARS-CoV-2 coronavirus pandemic, it is important to study the activities undertaken by nurses to cope with stress.

Aim of the study: The study's main objective was to analyze strategies of coping with stress among nurses working in public and non-public medical institutions in Opolskie and Lubelskie provinces, Poland, during the COVID-19 pandemic.

Material and methods: The study group included a total of 155 nurses. The Mini-COPE questionnaire and the author's original questionnaire were used in the study.

Results: With increasing age, nurses coped with stress by using their sense of humor less often, seeking instrumental support, discharge of emotions, using psychoactive substances, and blaming themselves. Respondents with a master's degree were more likely to cope with stress by positive reevaluation, turning to religion, and seeking emotional and instrumental support. Examining the effect of job tenure on the level of coping strategies revealed significant variation for active coping (p=0.0355), sense of humor (p=0.0024), seeking emotional support (p=0.0209), seeking instrumental support (p=0.0062), preoccupation with something else (p=0.0383), discharge (p=0.0075), psychoactive substance use (p=0.0097), and blaming oneself (p=0.0155). There was no significant variation in the effect of place of employment on stress coping strategies.

Conclusions: During the pandemic, respondents managed stress mainly through active coping, planning, acceptance, positive reevaluation, and seeking instrumental support. As nurses age, they are more likely to use the strategy of turning to religion. Due to the growing problem of stress, it is necessary to identify and share information about ways to effectively cope with stress.

KEYWORDS: nurses, stress, pandemic, COVID-19

Background

Stress is a part of everyday life that is connected with both personal and professional life [1]. Some professions are more or less burdened by psychological stress. Nurses are undoubtedly more exposed to stressful factors than the majority of society, which is related to the nature of their work and the necessity to make quick decisions – sometimes associated with life-threatening situations [2,3]. Long-term exposure to emotionally difficult situations may lead to rapid professional burnout, impair mental and physical health [4,5], and negatively affect social well-being [6]. According to Marcysiak et al., the consequences of professional burnout may be physical, spiritual, and emotional exhaustion [5]. According to the National Labour Inspectorate, workplace stress "occurs when people – employees and employers – feel psychological discomfort concerning conditions and/or demands of work in a situation when, at a given

moment, these conditions and demands exceed their capabilities" [7].

In the face of the SARS-CoV-2 coronavirus pandemic, it has become increasingly important to study not so much the experience of stress but the activity undertaken by humans to cope with stressful events, which is referred to as stress coping [8]. Styles of coping with stress have been described by many authors, including Heszen-Niejodek and Sęk. They define coping with stress as an individual, characteristic set of strategies that is activated when confronted with a specific stressful situation [9]. Wrześniewski describes coping with stress as a process or a sequence of strategies changing over time that is related to changes in the psychophysical state of a person and the characteristics of a given situation. The use of a given coping strategy by a person depends on the coping style characteristic for this person; their gender, age, education, and current psychophysical state; the type of stressful situation; and personality components [10]. Schwarzer and Steffen noted that, in coping with stress, the time perspective and subjective certainty about the occurrence of upcoming events are important. Faced with these situations, a person can undertake a variety of coping behaviors that cannot be put into simple categories and strategies such as "fight or flight" or "relax" [11].

The situation of the pandemic caused by the SARS-CoV-2 virus cannot be assessed from a time perspective, as we do not know what tomorrow will bring; thus, the situation of medical personnel seems to be all the more difficult. The pandemic has affected all areas of human life, causing great anxiety and fear. To reduce the impact of these negative emotions, one can only seek to gain reliable knowledge about prevention, medical management and care of persons at risk of infection or ill with COVID-19. Due to the dynamically changing epidemic situation in Poland and worldwide during the SARS-CoV-2 pandemic, nursing care requires professional actions and decisions [12].

A review of 115 articles published in global journals up to April 20, 2020 confirms that healthcare workers are at high risk of developing physical/mental health effects resulting from the pandemic situation [13,14]. The COVID-19 pandemic highlights the need to focus on its impact on the mental health of healthcare workers (HCWs). Italian authors have shown that a high percentage of HCWs are at risk of developing post-traumatic stress disorder (PTSD) and post-traumatic stress symptoms (PTSS) [15].

Aim of the study

The aim of this study was to analyze stress coping strategies among nurses working in public and non-public medical institutions in the Opolskie and Lubelskie provinces of Poland during the COVID-19 pandemic.

Materials and methods

Study design and participants

This cross-sectional study was conducted from July to November 2020 in a group of 155 nurses (mean age 41.9±11.2 years) employed in medical institutions in the Opolskie and Lubelskie provinces in Poland. Written consent was obtained from the Bioethics Committee of the Medical School in Opole (KB-33/PI/2020). The criteria for inclusion were as follows: (i) performing professional work as a nurse during the COVID-19 pandemic and (ii) agreeing to participate in the study. The exclusion criteria were: (i) nurse practitioners who were not active at the time of the COVID-19 pandemic and (ii) not providing consent to participate in the study. This study was conducted online. The sample was selected purposively using snowball sampling. The questionnaire was initially sent and made available online to a small group of nurses in the Opolskie and Lubelskie voivodships, who then sent it to their friends who were nurses employed at public and non-public medical institutions in those voivodships. The beginning of the questionnaire included information about the purpose and anonymity of the study, as well as the opportunity to withdraw from the study at any stage.

Data collection

In order to assess nurses' stress coping strategies, the Mini-COPE questionnaire was used to examine the degree of coping with stress in a difficult situation. The Mini-COPE Questionnaire is the shortened version of Carver et al.'s COPE Questionnaire adapted into Polish by Juczynski and Oginska-Bulik [8]. The questionnaire consists of 28 statements that are part of 14 coping strategies, including active coping, planning, positive reappraisal, psychoactive substance use, cessation, blaming oneself, seeking emotional support, seeking instrumental support, dealing with something else, denial, discharge, turning to religion, acceptance, and humor. There are two assertions for each strategy. The respondent evaluates the assertions about behavior during a difficult situation on a scale of 0 to 3, where 0 indicates "I almost never act this way", 1 indicates "I rarely act this way", 2 indicates "I often act this way", and 3 indicates "I almost always act this way". Each strategy is evaluated separately based on the

average number of points obtained from the two statements assigned to it [8].

To assess the sociodemographic characteristics of the nurses, an interview questionnaire was administered that assessed sex, education, marital status, seniority, and place of employment.

Statistical methods

Statistical analysis was performed using R statistical software (version 13). For quantitative variables, the arithmetic mean and standard deviation (SD) were calculated. For nominal variables, frequency (i.e., percent) was determined. To assess statistically significant differences, due to the nature of the data, the non-parametric Mann Whitney U test, Kruskal-Wallis test, and Kruskal-Wallis post-hoc test were used. For correlation analysis, Spearman's rank correlation was used. For all analyses, $p < 0.05$ was considered to be statistically significant.

Results

Sociodemographic characteristics

The sociodemographic characteristics of the respondents are shown in Table 1.

Table 1. Characteristics of the surveyed nurses.

Variables	n	%
Gender		
Women	149	96.1
Men	6	3.9
Education		
Nursing High School	23	14.8
Bachelor of Nursing	64	41.3
Master of Nursing	68	43.9
Marital status		
Single	43	27.7
Married man/married woman	98	63.2
Divorced man/divorced woman	12	7.7
Widower/ widow	2	1.3
Seniority		
0–10 years	44	28.4
11–20 years	33	21.3
21–30 years	41	26.5
>30 years	37	23.9
Place of employment		
Surgery department	69	44.5
Conservative ward	86	55.5

Most of the respondents were female (96.1%, n=149), with up to 10 years of experience (28.4%, n=44) or 21–30 years of experience (26.5%, n=41), and working mainly in conservative wards (55.5%, n=86). The majority of respondents were married (63.2%, n=98). The lowest percentage of respondents had no higher education (14.8%, n=23).

Level of coping with stress (Mini-COPE)

For the individual methods of coping with stress on the Mini-COPE inventory scored from 0 to 3, where 3 indicates the most frequent behavior, the respondents indicated that they most often fight stress by active coping (2.45), i.e., taking action to improve the situation; planning (2.31), i.e., thinking about and planning what to do; acceptance (1.95), i.e., accepting the situation and learning how to live with it; positive reevaluation (1.93), i.e., seeing the situation in a more positive light; and seeking instrumental support (1.91), i.e., seeking and receiving advice and help from others (see Figure 1).

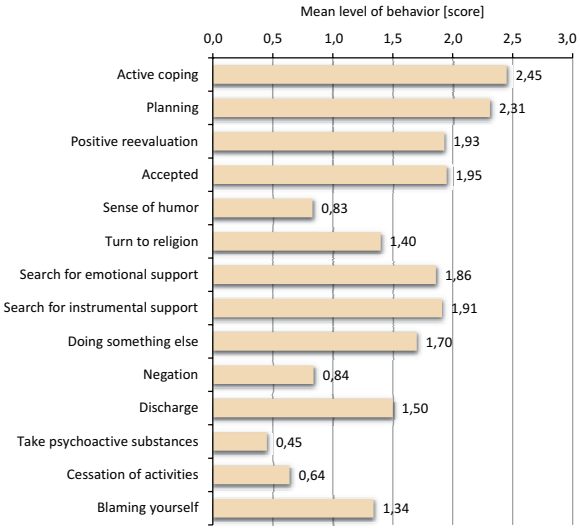

Figure 1. Scores for individual strategies for coping with stress (Mini-COPE) in the surveyed nurses. A higher value indicates a more frequently used behavior

Examining the relationship between age and coping strategies (Mini-COPE), significant effects were observed for sense of humor, turning to religion, seeking instrumental support, discharge, psychoactive substance use, and blaming oneself (Table 2). In all cases except for turning to religion, a significantly negative correlation was obtained: this means that, with age, the respondents used these strategies less frequently. In the case of turning to religion, a weak positive correlation was obtained, i.e., with age, the surveyed nurses more often fought stress through the use of religion.

Table 2. Correlation between age and scores for the individual coping strategies (Mini-COPE).

Variables	Spearman's r correlation coefficient
Active coping	0.15
Planning	0.04
Positive reevaluation	0.07
Acceptance	–0.04
Sense of Humor	**–0.23***
Turning to Religion	**0.16***
Search for Emotional Support	–0.16
Search for Instrumental Support	**–0.21***
Doing something else	–0.04
Negation	0.07
Discharge	**–0.19***
Take psychoactive substances	**–0.24***
Cessation of Activities	–0.08
Blaming yourself	**–0.21***

* significant relationship at p<0.05.

When examining the effect of education on the coping strategies (Mini-COPE), significant differ ences were observed for active coping (p=0.0341), positive reappraisal (p=0.0116), turning to religion (p=0.0150), seeking emotional support (p=0.0015), and seeking instrumental support (p=0.0011). Detailed analysis showed that respondents with a master's degree were more likely than those with a bachelor's degree to cope with stress through positive reevaluation and turning to religion; in contrast, nurses with a bachelor's degree and secondary medical education were more likely to cope with stress by seeking emotional support and seeking instrumental support (see Table 3)

Examining the effect of job tenure on the coping strategies (Mini-COPE), significant variation was identified for active coping (p=0.0355), sense of humor (p=0.0024), seeking emotional support (p=0.0209), seeking instrumental support (p=0.0062), preoccupation with something else (p=0.0383), discharge (p=0.0075), psychoactive substance use (p=0.0097), and blaming yourself (p=0.0155). Detailed analysis showed that respondents with the lowest seniority (up to 10 years) were more likely than those working over 30 years to cope with stress by feeling humorous, seeking emotional support, seeking instrumental support, and blaming themselves and to a higher extent than nurses and nurses with 21-30 years of seniority used a sense of humor and discharge (see Table 4).

When examining the effect of workplace on the coping strategies for stress (Mini-COPE), statistical analysis showed no significant variation in any of the cases analyzed (see Table 5).

Table 3. Relationships between particular coping strategies (Mini-COPE) and the education of the respondents

Variables	Education						Kruskal-Wallis Test		
	Nursing High School		Bachelor of Nursing		Master of Nursing				
	$\bar{x}$	SD	$\bar{x}$	SD	$\bar{x}$	SD	H	p	Relationship
Active coping	**2.63**	**0.46**	**2.32**	**0.56**	**2.51**	**0.50**	**6.75**	**0.0341***	
Planning	2.26	0.54	2.29	0.60	2.35	0.55	0.37	0.8318	
Positive reevaluation	**1.87**	**0.55**	**1.78**	**0.61**	**2.10**	**0.58**	**8.92**	**0.0116***	**2-3****
Acceptance	1.83	0.56	1.97	0.58	1.96	0.61	0.36	0.8338	
Sense of humor	0.76	0.50	0.85	0.58	0.83	0.64	0.34	0.8434	
Turning to religion	**1.37**	**0.88**	**1.14**	**1.01**	**1.65**	**0.97**	**8.39**	**0.0150***	**2-3****
Search for emotional support	**1.54**	**0.77**	**1.71**	**0.80**	**2.10**	**0.63**	**13.03**	**0.0015***	**2-3, 1-3****
Search for instrumental support	**1.67**	**0.67**	**1.77**	**0.65**	**2.12**	**0.56**	**13.72**	**0.0011***	**2-3, 1-3****
Doing something else	1.70	0.63	1.70	0.74	1.69	0.62	0.02	0.9880	
Negation	0.93	0.66	0.83	0.75	0.82	0.76	0.87	0.6470	
Discharge	1.37	0.50	1.52	0.67	1.54	0.62	1.45	0.4848	
Take psychoactive substances	0.33	0.54	0.52	0.77	0.43	0.65	0.58	0.7479	
Cessation of activities	0.50	0.54	0.69	0.56	0.63	0.59	2.28	0.3194	
Blaming yourself	1.26	0.71	1.41	0.80	1.30	0.69	0.76	0.6845	

$\bar{x}$ – arithmetic mean, SD – standard deviation, H – value of Kruskal-Wallis test; * significant variation at p<0.05; ** variables between which there is a statistically significant difference in the Kruskal-Wallis post-hoc test.

Table 4. Relationship between strategies for coping with stress (Mini-COPE) and nurses' seniority

Variables	Seniority								Kruskal-Wallis Test		
	0–10 years		11–20 years		21–30 years		>30 years				
	$\bar{x}$	SD	$\bar{x}$	SD	$\bar{x}$	SD	$\bar{x}$	SD	H	p	Relationship
Active coping	**2.38**	**0.58**	**2.29**	**0.52**	**2.61**	**0.51**	**2.50**	**0.46**	**8.57**	**0.0355***	
Planning	2.39	0.53	2.09	0.63	2.37	0.61	2.35	0.48	5.63	0.1310	
Positive reevaluation	2.06	0.66	1.79	0.53	1.89	0.63	1.96	0.56	5.02	0.1703	
Acceptance	2.06	0.56	1.94	0.54	1.94	0.58	1.82	0.66	2.68	0.4436	
Sense of humor	**1.14**	**0.69**	**0.76**	**0.47**	**0.70**	**0.57**	**0.68**	**0.46**	**13.64**	**0.0024***	**1-3,4****
Turning to religion	1.20	1.09	1.36	0.97	1.63	0.96	1.39	0.92	4.42	0.2200	
Search for emotional support	**2.13**	**0.68**	**1.73**	**0.75**	**1.89**	**0.70**	**1.62**	**0.81**	**9.74**	**0.0209***	**1-4***
Search for instrumental support	**2.15**	**0.59**	**1.86**	**0.58**	**1.93**	**0.63**	**1.64**	**0.68**	**12.37**	**0.0062***	**1-4***
Doing something else	1.90	0.62	1.59	0.51	1.48	0.80	1.80	0.63	8.41	0.0383*	
Negation	0.84	0.78	0.73	0.64	0.88	0.73	0.89	0.80	0.76	0.8589	
Discharge	**1.74**	**0.61**	**1.52**	**0.58**	**1.27**	**0.61**	**1.47**	**0.61**	**11.97**	**0.0075***	**1-3****
Take psychoactive substances	0.74	0.88	0.50	0.61	0.27	0.50	0.27	0.55	11.40	0.0097*	
Cessation of activities	0.65	0.65	0.70	0.50	0.61	0.58	0.59	0.54	1.21	0.7494	
Blaming yourself	**1.64**	**0.82**	**1.33**	**0.67**	**1.21**	**0.64**	**1.14**	**0.70**	**10.30**	**0.0155***	**1-4****

$\bar{x}$ – arithmetic mean, SD – standard deviation, H – value of Kruskal-Wallis test; * significant at $p<0.05$; ** variables between which there is a statistically significant difference in the Kruskal-Wallis post-hoc test.

Table 5. Relationship between individual coping strategies (Mini-COPE) and nurses' workplace

Variables	Hospital department				Mann-Whitney Test	
	Conservative ward		Surgery department			
	$\bar{x}$	SD	$\bar{x}$	SD	Z	p
Active coping	2.49	0.54	2.39	0.51	1.41	0.1591
Planning	2.33	0.57	2,29	0.58	0.42	0.6780
Positive reevaluation	1.91	0.62	1.96	0.59	–0.25	0.8034
Acceptance	1.97	0.59	1.92	0.59	0.66	0.5063
Sense of humor	0.79	0.53	0.88	0.66	–0.41	0.6812
Turning to religion	1.49	1.01	1.28	0.96	1.34	0.1809
Search for emotional support	1.77	0.75	1.96	0.74	–1.65	0.0981
Search for instrumental support	1.85	0.67	1.97	0.61	–0.97	0.3337
Doing something else	1.66	0.68	1.74	0.66	–0.30	0.7639
Negation	0.85	0.74	0.83	0.75	0.24	0.8076
Discharge	1.46	0.56	1.56	0.69	–1.08	0.2792
Take psychoactive substances	0.37	0.59	0.55	0.79	–1.25	0.2120
Cessation of activities	0.59	0.56	0.70	0.58	–1.21	0.2261
Blaming yourself	1.26	0.68	1.43	0.80	–1.43	0.1535

$\bar{x}$ – arithmetic mean, SD – standard deviation, Z – Mann-Whitney U-test.

Discussion

This study attempted to explore the coping strategies used to deal with stress by nurses working during the COVID-19 pandemic in healthcare units in the Opolskie and Lubelskie provinces. First, it should be noted that during the pandemic, the nurses studied combated stress mainly through active coping, planning, acceptance, positive reevaluation, and seeking instrumental support. Respondents with the shortest length of service coped with stress through humor, seeking emotional support, seeking instrumental support, and blaming themselves.

The COVID-19 pandemic has been a source of great stress for individuals and social groups. Different people have experienced different levels of psychological crisis, but it has been particularly dif-

ficult for those at the center of the crisis [16]. A study conducted during the pandemic in China found that, among healthcare workers, nurses were particularly likely to experience psychological strain [17]. The rapid spread of the SARS-CoV-2 coronavirus, its high infectiousness and mortality rate, and the lack of specific treatment poses a great risk to nurses' life and health. In addition, due to a lack of medical personnel, nurses are faced with additional physical, mental, and environmental stressors, which lead to increased psychological burden and impact on their emotional reactions [16,18].

Inherent in stressful situations are ways of coping with stress. Adequately applied strategies can help to cope with stress and its consequences, including negative emotions [19]. The effectiveness of particular coping strategies depends on many factors, including the stressful situation and the possibility of controlling it. Problem-focused strategies are often considered to be the most effective. Coping with stress by focusing on emotions is usually considered less effective. On the other hand, avoidance-focused strategies are considered the least effective [8, 20]. In the available literature, there are no studies on strategies applied by nurses during the COVID-19 pandemic. Therefore, the discussion of the obtained research results will be based on the approximation of the reports of Polish authors from earlier years.

In our analysis, empirical data showed that, during the pandemic, nurses in the process of coping with stress used both task-focused strategies (active coping and planning) and strategies that serve to reduce tension and negative emotions (acceptance and positive reevaluation). As can be seen, nurses participating in the study tended to prefer active coping strategies which, in turn, indicates that their efforts are focused on the problem and coping with various difficult situations originating from the work environment. The strategies used least frequently by respondents include denial and stopping action (avoidance behavior) and substance use (helplessness). In the available Polish publications, there are no studies on the identification of stress coping styles of nurses during the COVID-19 pandemic. The authors, who before the pandemic used the Mini-COPE Questionnaire in a study on coping strategies, obtained similar results. The nurses' most frequently used strategies during stressful situations were active coping strategies, planning, and taking care of something else. The least popular strategies were substance abuse, stopping activities, and denial [21-24].

In our analysis, we found a relationship between age, length of service, and education and coping strategies in Polish nurses. The problem-focused strategy (seeking instrumental support) tended to be used during the pandemic by younger people, people with a master's degree, and people with the shortest length of service (up to 10 years). Seeking instrumental support is considered a problem-focused strategy and its aim is to remove the stressor or reduce the negative effects caused by it [8].

Research has shown that using humor to cope with stress increases individual adaptive capacity in the face of workplace stress by changing perspectives and distancing oneself from problems at work [25]. Analysis of our own research showed that a sense of humor, which is considered less effective in coping with stress but is very useful in some situations [8], was used by younger respondents and those with the lowest work experience (up to 10 years).

In the present study, younger respondents often coped with stress by choosing to use psychoactive substances and blaming themselves. In addition, those with the lowest seniority (up to 10 years) were more likely to cope by blaming themselves and discharging. Use of the strategy "turning to religion" was associated with age (as respondents grew older, they were more likely to seek solace in prayer and meditation) and a master's degree education. The use of the strategy aimed at turning to religion may be due to the need for emotional support [22]. In contrast, seeking reassurance, understanding, and support from others was reported by people with the lowest length of service (up to 10 years) and respondents with a master's degree.

Limitations of the study

Limitations of the study include the small sample size and the limited number of provinces that the respondents came from. In the future, it would be advisable to conduct similar studies with a larger number of nurses and to extend the study to a larger number of provinces, as well as to compare the results obtained in Poland with those obtained in other countries.

The advantage of the study is that the results can be used in the future to allow monitoring of changes in nurses' applied strategies for coping with stress during a pandemic (both nationally and internationally).

Conclusions

During the Sars-CoV-2 pandemic, the surveyed nurses combated stress mainly through active coping, planning, acceptance, positive reevaluation, and seeking instrumental support. Likely due to age and life experience, respondents with the lowest work experience (up to 10 years) tended to cope with stress through humor, seeking emotional support, seeking instrumental support, and blaming themselves. In

view of the growing problem of stress, it is necessary to share information on effective ways of coping with stress. Increasing nurses' awareness of their own resources and limitations, as well as providing training in social skills, is an important activity for addressing workplace stress.

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Correspondence address:
Elżbieta Szlenk-Czyczerska
Uniwersytet Opolski
Instytut Nauk o Zdrowiu
ul. Katowicka 68
45-060 Opole, Poland
E-mail: ela6035@onet.pl

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