

# Nurses' Work-related Stress during COVID-19: Reasons, Expressions and Coping Strategies

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**Keywords:** COVID-19 pandemic, nurses, work-related stress.

**Summary.** Medical staff and affiliated healthcare professionals are recognized as a vulnerable group because they constantly are under both physical and psychological pressure. The COVID-19 pandemic has alarming implications for individual and collective health, and physical, emotional and social functioning of nurses and other healthcare professionals. Early recognition of work-related stress and the use of appropriate coping techniques would help nurses to maintain emotional stability in contributing to timely and quality nursing care.

The aim of this study was to investigate the level of work-related stress and its reasons, expressions and coping strategies among nurses during the COVID-19 situation.

**Methods.** A quantitative research strategy was applied for the study. Data were collected using a structured survey. Nurses answered 92 questions divided into four sections: reasons of stress (32 questions); the impact of stress on personal health (20 questions); stress coping strategies (31 questions); sociodemographic data and stress level (9 questions). 83 items were rated by the Likert scale from 'strongly agree' to 'strongly disagree'. In total, 180 nurses participated in the study.

**Results.** The main reasons of work-related stress to occur were the risk of contracting (67.2%) or transmitting (87.1%) the virus to family members, requirements for the use of personal protective equipment (61.1%), changes in a work organization due to increasing workload and working time (56.9%), lack of nursing staff (64.2%) and high media attention exclusively for doctors rescuing the lives of those suffering from the disease and thus ignoring the contribution of nurses (52.3%). To cope with stress, nurses mostly used to follow the work under COVID-19 situation guidelines (82.1%), to stay calm and not think a lot about the pandemic (71.7%); specific relaxation techniques or spiritual interventions were rarely used.

**Conclusions.** Nurses expressed work-related stress concerned with the specific reasons of the coronavirus pandemic: fear to be infected or transmit infection to family, unforeseen clinical situations, permanent use of personal protective devices and shortage of human resources in the unit. Use of education and information tools, the application of relaxing methods and a rational approach to the critical situation were the most common work-related stress reduction methods used by nurses during the coronavirus pandemic in Lithuania.

## Introduction

Healthcare workers belong to the group at an increased risk of work-related stress. According to the World Health Organization, of 59 million healthcare professionals worldwide, ~14.5 million professionals are under professional stress. In the European Union, it is estimated that 27.9% of professionals in their professional activities are exposed to factors that negatively affect their mental health and that around 14% of workers experience anxiety and depression (1). The prevalence of professional stress in nurses prior to the outbreak of the coronavirus pandemic was 41.2% (2). With this pandemic, the exposure of negative work environment factors that may cause stress, fatigue and burnout for nurses even more increased.

Medical staff and affiliated healthcare workers are recognized as a vulnerable group to experience stress because they are constantly under both physical and psychological pressure. The results of the studies show that nurses are the most stressful occupational group (3, 4).

Prolonged stress influences physical and psychological health problems of nurses (15). The professional activities of nurses require physical and psychological efforts, responsibility and ethical values, although their work environment has limitations and challenges, which are described as stressors.

Stressful situations may relate to macro-issues such as a health sector reform and restructuring, where various workplace and job issues arise (5). Other stressors are associated with working conditions at the unit or institution level where the effective management and smooth organization of work are crucial (6, 7). In addition, stressors may be associated with complicated clinical situations,

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interpersonal relationships with colleagues, communication with the patients and their relatives (8, 9). The COVID-19 pandemic has alarming implications for personal and collective health, and physical, emotional and social functioning of individuals (10). The mental health and wellbeing of the whole society have been severely impacted by this crisis. Further these effects were translated into a range of emotional reactions (such as distress or mental conditions), unhealthy behaviors (such as excessive substance use), and noncompliance with public health directives (such as home confinement and vaccination) among people who contract the disease and in the general population (11). Regardless of physical or mental health problems of nurses, they potentially have a negative impact on patient care, patient safety and the quality of care as a whole (16).

In particular, COVID-19 pandemic has an impact on the activities of nurses and other healthcare professionals when they face challenges in providing care to patients infected with coronavirus infection (12, 13). First responders and frontline workers, particularly workers in health and long-term care, play a crucial role in fighting the outbreak and saving lives. However, they are under exceptional stress, being faced with extreme workloads, difficult decisions, risks of becoming infected and spreading infection to families and communities and witnessing deaths of patients. Stigmatization of healthcare workers has been common in many communities as well (14).

Most nurses report positive approaches to coping with COVID-19 and very few choose avoidant-coping strategies (11, 13). Many researchers reveal that COVID-19 protective measures, avoidance strategy, social and psychological support, effective management and faith-based practices are applied as work-related stress coping strategies in nursing practice. Early identification of stress symptoms, timely and targeted methods of help are measures to preserve the mental and physical health of nurses (9–13).

With this study, we aimed to investigate the level of nurses' work-related stress and its reasons, expressions and coping strategies among nurses.

## Methods

*Design.* The cross-sectional survey was performed at two Kaunas city hospitals in Lithuania.

*Participants and Study Instrument.* In total, 180 nurses participated in the study (response rate – 97.3%). The inclusion criteria for respondents were: 1) nurses who have worked in healthcare facilities in the last 10 months, i.e. since the start of the coronavirus pandemic; 2) nurses from medical, surgical and emergency care units.

Respondents filled in the anonymous questionnaire with 92 questions divided into 4 sections: rea-

sons of stress (32 questions); the impact of stress on health and behavior (20 questions); stress coping strategies (31 questions); sociodemographic data and stress levels (9 questions). The majority of the items (83 items) were rated by the Likert scale from 'strongly agree' to 'strongly disagree'. To ensure the conciseness and a systematic view of the data, the responses 'strongly agree' and 'agree' were combined. The questionnaire was developed by the authors relying on the scientific literature and professional experience. All of the questions were specified to the pandemic situation. The survey tool was piloted with 20 nurses. The improvements of the questionnaire were made by corrections of the statements' consistency and clarity of the concepts.

*Study Organization.* The data were collected between October and December, 2020. The public had not yet been vaccinated at all, which means that nurses were able to meet not only sick people but also potential coronavirus infection transmitters.

The author distributed questionnaires to nursing managers at the unit at the agreed time with the explanation of the study aim. Later, nursing managers distributed questionnaires to the nursing staff and collected them filled in into a sealed box provided by the researcher.

*Ethical Consideration.* The study protocol was approved by the Bioethics Center of the Lithuanian University of Health Sciences (No. BEC-SL(B)-15).

*Statistical Analysis.* The data were recorded and analyzed using the Statistical Package (IBM SPSS Statistics) version 26.0. The descriptive statistics and single factor analysis of variance ANOVA (Bonferroni post-hoc test) was applied for the data analysis. Statistically significant data were considered when  $P < 0.05$ .

## Results

*Characteristics of the Sample (n = 180).* The majority (97.7%) of the respondents were women. Half of the nurses (50.0%) were 36–55 years of age. Most of the respondents (57.3%) had work experience of 22 years and more. Half of the sample (42.3%) worked in the medical unit and 26.1% were from the emergency care unit (Table 1).

*The Prevalence, Reasons, Expression and Coping Strategies of Nurses' Professional Stress.* The expression of work-related stress was calculated by combining the answers 'I feel moderate stress' and 'I feel high stress' (by the scale from 5 to 10 points). According to nurses' subjective assessment, the largest proportion of the nurses who felt professional stress from 5 to 10 points was at the time when the quarantine was just announced in the country (71.9%, March 2020), and the smallest proportion of nurses with high and moderate stress was a few months after this announcement (52.0%, May

2020). In October 2020, 62.7% of nurses suffered from high and moderate professional stress.

Fear to transmit infection to family members (87.1%), fear to be infected during nursing procedures (67.2%), unforeseen clinical situations (61.5%) and permanent use of personal protective devices (61.1%) were the most common reasons of professional stress in clinical environment for nurses during the emergence of the coronavirus pandemic (Table 2).

Nurses were stressed by the shortage of human resources in the unit (64.2%) and increased workload and work duration (56.9%), changed working conditions that require additional specific responsibilities (57.6%). By the nurses' opinion, the role of doctors was exalted in the media. Nurses were stressed by low media attention to their professional activities and commitment during the coronavirus pandemic (52.3%) (Table 3).

The expression of professional stress in nurses during the coronavirus pandemic was mostly caused by fatigue (39.3%) and headache (28.8%). Expression of stress in association with pain, disturbances in vital activities, unpleasant sensations or harm-

ful effects on health were not particularly common among nurses at the pandemic period (Table 4).

Following the information provided by the institution about the preparation for care of patients with coronavirus infection (83.1%) and following the institutional instructions and guidelines (82.1%) were the most common ways used by nurses to overcome professional stress. Efforts to calmly accept the situation as it was and not to think much about it (71.7%) and efforts to see something good in every situation (68.4%) also were used by nurses as rational ways to protect themselves from the professional stress. In addition, nurses applied relaxing techniques and spiritual practices to manage stress during the pandemic, for example, to prepare meal and listen to music. Unhealthy lifestyle habits (i.e., smoking, alcohol consumption, sedatives) as a stress management strategy were used occasionally by Lithuanian nurses during COVID-19 pandemic period (Table 5).

*Comparative Analysis of the Prevalence, Reasons and Expression of Nurses Professional Stress during COVID-19.* The results revealed that a larger proportion of nurses working in medical units felt be-

Table 1. Characteristics of the sample (n = 180)

| Variable                |           | % (n)      |
|-------------------------|-----------|------------|
| Gender                  | Female    | 97.7 (176) |
|                         | Male      | 2.3 (4)    |
| Age group (years)       | ≤ 35      | 23.3 (42)  |
|                         | 36–55     | 50.0 (90)  |
|                         | ≥ 56      | 26.7 (48)  |
| Work experience (years) | ≤ 10      | 27.7 (50)  |
|                         | 11–21     | 15.0 (27)  |
|                         | ≥ 22      | 57.3 (103) |
| Unit                    | Medical   | 42.3 (76)  |
|                         | Surgical  | 31.6 (57)  |
|                         | Emergency | 26.1 (47)  |

Table 2. The reasons of nurses' work-related stress in clinical environment regarding COVID-19 (n = 180)

| Statement  | Strongly agree / Agree |
|--|------------------------|
|  | % (n)                  |
| Fear to transmit infection to family members   | 87.1 (156)             |
| Fear to be infected during nursing procedures  | 67.2 (119)             |
| Unforeseen clinical situations   | 61.5 (109)             |
| Permanent use of personal protective devices   | 61.1 (110)             |
| Fear to make mistakes in nursing actions and procedures  | 56.4 (101)             |
| Limitations on the satisfaction of physiological needs (eating, drinking, using the toilet) by wearing special personal protective devices | 53.4 (93)              |

ing stressed after the announcement of quarantine in Lithuania (March 2020) ( $P < 0.001$ ) and a few months after (May 2020) ( $P = 0.001$ ) than nurses working in surgery and emergency care units. No statistically significant differences were found in the prevalence of professional stress among nurses in regard to their age and duration of work experience.

Nurses with work experience of 11–21 years more frequently than those with  $\leq 10$  years of practice felt stress because of temperature checks ( $P = 0.030$ ). Accordingly, during the coronavirus pandemic, the lack of personal protective devices was reported as a cause of professional stress more frequently by nurses with shorter work experience

Table 3. The reasons of nurses' work-related stress regarding work organization aspects and media news during COVID-19 (n = 180)

| Statement   | Strongly agree / Agree |
|---|------------------------|
|   | % (n)                  |
| Shortage of human resources in the unit   | 64.2 (113)             |
| Changed working conditions that require specific responsibilities   | 57.6 (102)             |
| Increased work-load and work duration   | 56.9 (99)              |
| Rotation of nurses from one unit to another   | 53.7 (94)              |
| Lack of time to provide emotional support to the patient  | 53.4 (95)              |
| The role of doctors is exalted in the media, but the contribution of nurses in the fight against coronavirus infection is ignored | 52.3 (92)              |
| Lack of personal protective devices   | 23.1 (41)              |

Table 4. Expression of work-related stress symptoms and behavior of nurses during COVID-19 (n = 180)

| Statement           | Strongly agree / Agree |
|---------------------|------------------------|
|                     | % (n)                  |
| Fatigue             | 39.3 (70)              |
| Headache            | 28.8 (51)              |
| Back pain           | 20.3 (36)              |
| Sleepiness          | 15.4 (27)              |
| Increase in smoking | 6.3 (11)               |
| Use of alcohol      | 3.5 (6)                |

Table 5. Strategies nurses used to cope with work-related stress during COVID-19 (n = 180)

| Statement   | Strongly agree / Agree |
|---|------------------------|
|   | % (n)                  |
| I have followed the information provided by the institution about the preparation for care of patients with coronavirus infection | 83.1 (142)             |
| I followed the instructions and guidelines prepared by the institution  | 82.1 (142)             |
| I tried to calmly accept the situation as it was and tried not to think much about it   | 71.7 (127)             |
| Prepare meal  | 70.2 (125)             |
| I tried to see something good in every situation  | 68.4 (121)             |
| Listen to music   | 65.7 (115)             |
| Trusted to colleagues and increased cooperation in the team   | 62.5 (108)             |
| Started to smoke more   | 7.0 (12)               |
| Increased use of sedatives  | 4.0 (7)                |
| Use of alcohol  | 2.2 (4)                |

( $\leq 10$  years) than those with 11–21 years of practice ( $P = 0.039$ ). Nurses with shorter work experience ( $\leq 10$  years) less frequently expressed fear to be infected during nursing procedures than their colleagues with over 22 and more years of work experience ( $P = 0.045$ ) (Table 6).

Nurses working in surgical units were more likely to be stressed because of rotations from one unit to another during the pandemic ( $P < 0.001$ ), inability to satisfy patient's needs ( $P < 0.001$ ) and shortage of staff in the unit ( $P = 0.003$ ) than nurses from medical and emergency units. Nurses from medical units more often than nurses from surgical and emergency units identified the lack of time for patients' emotional support as the reason of work-related stress ( $P < 0.001$ ). Nurses working in medical units were also more stressed because of too short time to complete tasks ( $P = 0.001$ ), necessity to talk with

the patient or relatives about death ( $P = 0.018$ ), unforeseen clinical situations ( $P = 0.039$ ) and the fact that nurses' contribution in fighting against coronavirus infection were ignored by the media ( $P = 0.001$ ) than nurses from emergency units. In addition, nurses from surgical units, compared with medical unit nurses, more often indicated the lack of personal protective devices ( $P = 0.005$ ) and the perceived stress caring of severely ill/dying patients ( $P = 0.012$ ). Also, nurses from surgical units more often than nurses from emergency units were stressed by the lack of knowledge about coronavirus infection ( $P = 0.012$ ), and increased work-load and duty duration ( $P = 0.020$ ). However, fear of mistake during nursing procedures for medical nurses was more stressful than for surgical unit nurses ( $P = 0.019$ ) (Table 7).

Table 6. The reasons of nurses' work-related stress regarding duration of the work experience

| Reasons of stress                               | Work experience (years)  |                           |                           | <i>P</i> * |
|---|--------------------------|---------------------------|---------------------------|------------|
|   | Mean (SD)                |                           |                           |            |
|   | $\leq 10$                | 11-21                     | $\geq 22$                 |            |
| Continuous temperature check before work starts | 2.81 (1.21) <sup>a</sup> | 3.72 (1.46) <sup>b</sup>  | 3.11 (1.42) <sup>ab</sup> | 0.030      |
| Lack of personal protective devices             | 2.65 (1.19) <sup>a</sup> | 1.88 (1.30) <sup>b</sup>  | 2.34 (1.20) <sup>ab</sup> | 0.039      |
| Fear to be infected during nursing procedures   | 3.52 (0.99) <sup>a</sup> | 4.00 (1.04) <sup>ab</sup> | 4.01 (1.00) <sup>b</sup>  | 0.045      |

\*One-way ANOVA, Bonferroni post-hoc test;  $P < 0.05$ , SD – standard deviation, range of points 1–5. The similar letters a and b do not indicate differences between the values.

Table 7. The reasons of nurses' work-related stress regarding work unit

| Reasons of stress   | Work unit                 |                           |                           | <i>P</i> * |
|---|---------------------------|---------------------------|---------------------------|------------|
|   | Mean (SD)                 |                           |                           |            |
|   | Medical                   | Surgical                  | Emergency                 |            |
| Rotation of nurses from one unit to another   | 3.24 (1.49) <sup>a</sup>  | 4.06 (1.07) <sup>b</sup>  | 2.54 (1.22) <sup>c</sup>  | $< 0.001$  |
| Lack of time for patients' emotional support  | 3.99 (0.97) <sup>a</sup>  | 3.45 (1.09) <sup>b</sup>  | 2.89 (0.92) <sup>c</sup>  | $< 0.001$  |
| Inability to satisfy patient's needs  | 3.49 (0.88) <sup>a</sup>  | 3.55 (1.03) <sup>b</sup>  | 2.84 (0.80) <sup>c</sup>  | $< 0.001$  |
| The role of doctors is exalted in the media, but the contribution of nurses in the fight against coronavirus infection is ignored | 3.79 (1.05) <sup>a</sup>  | 3.50 (1.06) <sup>ab</sup> | 3.02 (1.20) <sup>b</sup>  | 0.001      |
| Too short time to complete task   | 3.61 (1.06) <sup>a</sup>  | 3.33 (1.20) <sup>ab</sup> | 2.87 (0.78) <sup>b</sup>  | 0.001      |
| Shortage of staff in the unit   | 3.87 (1.23) <sup>a</sup>  | 3.95 (1.06) <sup>b</sup>  | 3.24 (1.04) <sup>c</sup>  | 0.003      |
| Lack of personal protective devices   | 2.11 (1.18) <sup>a</sup>  | 2.80 (1.30) <sup>b</sup>  | 2.24 (1.08) <sup>ab</sup> | 0.005      |
| Care of severely ill/dying patients   | 2.43 (1.28) <sup>a</sup>  | 3.11 (1.44) <sup>b</sup>  | 2.89 (1.00) <sup>ab</sup> | 0.012      |
| Lack of knowledge about coronavirus infection   | 2.90 (1.10) <sup>ab</sup> | 3.04 (1.07) <sup>a</sup>  | 2.44 (0.79) <sup>b</sup>  | 0.012      |
| Talk with the patient and/or relatives about death  | 3.07 (0.93) <sup>a</sup>  | 2.96 (1.15) <sup>ab</sup> | 2.51 (1.08) <sup>b</sup>  | 0.018      |
| Fear of mistake during nursing procedures   | 3.81 (1.00) <sup>a</sup>  | 3.29 (1.33) <sup>b</sup>  | 3.37 (0.97) <sup>ab</sup> | 0.019      |
| Increased work-load and work duration   | 3.59 (1.17) <sup>ab</sup> | 3.91 (1.07) <sup>a</sup>  | 3.28 (1.03) <sup>b</sup>  | 0.020      |
| Unforeseen clinical situations  | 3.94 (0.82) <sup>a</sup>  | 3.75 (0.97) <sup>ab</sup> | 3.53 (0.73) <sup>b</sup>  | 0.039      |

\*One-way ANOVA, Bonferroni post-hoc test;  $P < 0.05$ , SD – standard deviation, range of points 1–5. The similar letters a, b and c do not indicate significant differences between the values.

Emergency unit nurses, more often than nurses from medical units, indicated the following work-related stress and behavior symptoms such as allergy ( $P = 0.003$ ), need to smoke more than usual ( $P = 0.008$ ), problems of sexual life ( $P = 0.016$ ) and skin problems ( $P = 0.034$ ) (Table 8).

Means of professional stress management, such as doing regular exercise ( $P < 0.001$ ) and listening to music ( $P = 0.002$ ), were applied more often by nurses with  $\leq 10$  years of work experience than those with  $\geq 22$  years of practice. Moreover, nurses with the shorter work experience ( $\leq 10$  years) more often than nurses with the longest work experience ( $\geq 22$  years) indicated that they had an intention to change the workplace ( $P = 0.011$ ). Nurses with  $\geq 22$  years of work experience more frequently than those with  $\leq 10$  years of practice applied yoga ex-

ercises ( $P = 0.004$ ). The expression of feelings in a creative way ( $P = 0.031$ ) was more relevant for nurses with 11–21 year work experience than those who were in practice longer (Table 9).

In relation to the work place, nurses from emergency units more often than nurses from medical units were more likely to accept the situation as it was and tried not to think much about it ( $P = 0.019$ ). A national decision to increase the salary for medical professionals was a more effective stress reducing means for nurses in emergency units than those from medical wards ( $P = 0.038$ ) (Table 9).

### Discussion

The professional stress level among nurses during the COVID-19 pandemic extremely increased. A study by Lai et al. (2020) showed that 71.5% of

Table 8. The nurses' work-related stress symptoms regarding the work unit

| Expression of stress symptoms | Work unit<br>Mean (SD)   |                           |                          | $P^*$ |
|-------------------------------|--------------------------|---------------------------|--------------------------|-------|
|                               | Medical                  | Surgery                   | Emergency                |       |
| Allergy                       | 1.68 (0.81) <sup>a</sup> | 2.04 (1.00) <sup>ab</sup> | 2.30 (1.07) <sup>b</sup> | 0.003 |
| I feel the need to smoke      | 1.39 (0.81) <sup>a</sup> | 1.60 (0.89) <sup>ab</sup> | 1.96 (1.23) <sup>b</sup> | 0.008 |
| Problem of sexual life        | 1.45 (0.68) <sup>a</sup> | 1.59 (0.68) <sup>ab</sup> | 1.83 (0.68) <sup>b</sup> | 0.016 |
| Skin problems                 | 1.89 (1.03) <sup>a</sup> | 2.21 (1.20) <sup>ab</sup> | 2.41 (0.97) <sup>b</sup> | 0.034 |

\*One-way ANOVA, Bonferroni post-hoc test;  $P < 0.05$ , SD – standard deviation, range of points 1–5. The similar letters a, b and c do not indicate differences between the values.

Table 9. Strategies nurses used to cope with work-related stress during COVID-19 in relation to work experience and unit

| Coping strategies  | Work experience (years)<br>Mean (SD) |                           |                           | $P^*$     |
|--|--------------------------------------|---------------------------|---------------------------|-----------|
|  | $\leq 10$                            | 11–21                     | $\geq 22$                 |           |
| Used regular exercise  | 3.19 (1.28) <sup>a</sup>             | 2.72 (1.21) <sup>ab</sup> | 2.28 (1.08) <sup>b</sup>  | $< 0.001$ |
| Listened music   | 4.06 (0.70) <sup>a</sup>             | 3.75 (0.94) <sup>ab</sup> | 3.48 (1.02) <sup>b</sup>  | 0.002     |
| Applied yoga exercise  | 1.23 (0.64) <sup>a</sup>             | 1.44 (0.93) <sup>ab</sup> | 1.44 (0.89) <sup>b</sup>  | 0.004     |
| The intention to change the workplace  | 2.58 (1.22) <sup>a</sup>             | 2.42 (1.41) <sup>ab</sup> | 1.94 (1.26) <sup>b</sup>  | 0.011     |
| I expressed feelings in a creative way (e.g., drawing, writing, making music, etc.)              | 1.96 (1.05) <sup>ab</sup>            | 2.46 (1.29) <sup>a</sup>  | 1.78 (1.11) <sup>b</sup>  | 0.031     |
|  | Work unit<br>Mean (SD)               |                           |                           |           |
|  | Medical                              | Surgical                  | Emergency                 |           |
| Tried to calmly accept the situation as it was and tried not to think much about it              | 3.67 (0.81) <sup>a</sup>             | 3.91 (0.65) <sup>ab</sup> | 4.07 (0.83) <sup>b</sup>  | 0.019     |
| State decision to increase the salaries of medical staff for intensive work during this pandemic | 2.77 (1.32) <sup>a</sup>             | 2.98 (1.41) <sup>ab</sup> | 3.46 (1.53) <sup>b</sup>  | 0.038     |
| Applied breathing exercises  | 1.70 (0.82) <sup>a</sup>             | 2.15 (1.03) <sup>b</sup>  | 1.91 (1.13) <sup>ab</sup> | 0.044     |

\*One-way ANOVA, Bonferroni post-hoc test;  $P < 0.05$ , SD – standard deviation, range of points 1–5. The similar letters a, b and c do not indicate differences between the values.

nurses felt stress in their working environment during this pandemic (19). Another study revealed that 62.2% of the nurses experienced moderate and severe professional stress during the pandemic. The results of our study are very much similar as about two-thirds of nurses felt high or moderate stress at the beginning of the pandemic period (March 2020) and slightly less to the latest months of the year (until October 2020).

Sociodemographic and work-related characteristics were important for nurses' stress experience during the pandemic period: nurses with longer work experience were more vulnerable to stress and nurses working in medical units had a higher level of professional stress (20). According to other studies, gender was also an important factor for stress experience during the pandemic as female nurses were more likely to experience increased stress (21). In our study, nurses from medical units felt being more stressed after the first announcement of quarantine in the country (March 2020) and a few months after (May 2020) than nurses working in a surgery and in emergency. This might be explained by facts that medical unit nurses face extreme and urgent situations less often than nurses in emergency or surgery. In addition, the usual mode of protection from infection and dressing was changed with the pandemic and nurses from medical wards had much to learn in order to adapt to the new situation. Finally, nursing staff from medical units was forced to change their profile from specialized care to COVID-19 wards and mostly older patients, while those with chronic diseases were hospitalized in medical units if their condition was not critical. All of this created additional stress for medical unit nurses.

We found that fear to transmit the infection to family members and fear to be infected during nursing procedures were the most common reasons of professional stress for nurses (22). The study results from China reported similar findings about the main stressful factor for nurses. According to Zhang et al. (2020), the regular use of personal protective devices created challenges in terms of performance of work tasks, communication, physiological and hygienic needs (24). Cofre et al. (2020) found that nurses were forced to work longer working hours without days off (25). The constant use of additional personal protective devices and shortage of staff, which usually makes nurses' duties longer than normal with fewer breaks and days off, created a lot of stress for Lithuanian nurses as well.

Repeated media images of severely coronavirus ill people and the reports on medical staff exhaustion, alarming statistics and expanding restrictions have created an uncertainty and permanent ten-

sion in the society. In the critical situation, such as a coronavirus pandemic, media looked more closely at medical staff and mentioned in information articles not only the role of doctors but also the input of other health professionals in fighting against the pandemic. If in other countries the role of doctors and nurses was rather equally exalted in the media (32, 33), in Lithuania that was different, according to the opinion of the participants from our study. Nurses felt stressed due to the media ignorance of their hard work during the COVID-19 pandemic as the attention was exclusively on doctors or sometimes on emergency teams rescuing the lives of those suffering from the disease. It was regarded as unequal recognition of health professionals' contribution to the management of pandemic and its consequences that possibly diminished self-esteem and wellbeing of nurses.

Stress has a negative impact on the health of nurses during the coronavirus pandemic (26). There is evidence from China that the pandemic-related stress at nurses work usually is expressed by symptoms of anxiety and depression (20, 21) and fatigue is also one of the most common complaints identified by the majority of nurses during COVID-19 outbreak (27). Lithuanian nurses most often felt fatigue during the pandemic period and each third nurse experienced headache and back pain. Foreign studies confirmed that nurses were even more likely to suffer from this type of pain during the pandemic (23). Moreover, according to Hennein et al. (2020), during the coronavirus pandemic, in the USA, nurses were more likely than usual to consume alcohol (28). In our study, the use of alcohol as a stress reliever and coping strategy was used by nurses relatively rarely.

The effectiveness of stress management methods and techniques that are favorable to the emotional and physical health of nurses has been analyzed by Lithuanian and foreign researchers (4, 31). Education and teaching methods based on obtaining relevant and specific information for practice and the most effective techniques of reducing professional stress are most appreciated by nurses. The nurses agreed that being knowledgeable about COVID-19 disease and patient care allowed them to achieve psychological stability and perform professional functions qualitatively (21). Organizational, informational and psychosocial ways of coping with stress during the coronavirus pandemic allow achieving harmony between the emotional and spiritual stability and professional excellence of careers, focused on providing quality patient care (8, 9, 17, 18). Self-control may help when nurses try to accept the situation as it is, maintaining a positive attitude towards changed working conditions (23). We found that the new situation and acquired experiences during the

coronavirus pandemic encouraged nurses to think rationally and stay calm in accepting the situation. The results of our study coincided with the results of foreign researchers on the implementation of a rational approach to stress management during the pandemic.

A close social environment has a special role to play in ensuring people's physical and psychosocial security (29). The results of this study repeated the results of foreign studies that the support of managers, colleagues, effective teamwork and the support of loved ones are important in the management of professional stress for nurses (25). For nurses in Lithuania, the trust among colleagues and increased cooperation in the team was an effective strategy to avoid work-related stress during pandemic.

Physical activity and relaxation are widely known as effective ways of improving mood, raising awareness, helping to cope with challenges and reduce stress (30). The results of Zhang et al. (2020) demonstrated the importance of music therapy, physical activity, balanced nutrition in reducing professional stress among nurses during the coronavirus pandemic (21). Lithuanian nurses also tried to find other means to mentally escape from their work environment and for stress reduction tried to be involved in meal preparation or listening to music. Less experienced nurses were more active in using alternative stress management methods that enhance physical health and ensure emotional stability, such as regular and yoga exercise and music.

### Limitations

First, the researchers did not have the opportunity to communicate directly with the respondents and to explain them the study aim and participants' rights orally; this was done indirectly by the nursing administrators. Second, because of the shortage of

staff and protective devices use on the duty, nurses needed time after-work hours to fill in the survey, which may have diminished their attention and concentration in answering questionnaire of a relatively high volume.

### Conclusions

The majority of nurses experienced work-related stress during the COVID-19 pandemic, especially in the early stages of the announced quarantine (from March 2020 until May 2020).

The main causes of work-related stress were the risk of contracting or transmitting the virus to family members, requirements of personal protective equipment use, and changes in work organization due to increasing workload and working time, lack of nursing staff and high media attention exclusively for doctors, thus ignoring the contribution of nurses. The most prevalent symptoms of nurses' work-related stress were fatigue and headache.

To cope with stress, nurses were inclined to follow instructions and work guidelines on COVID-19, to stay calm and not to think a lot about the pandemic; specific relaxing techniques or spiritual interventions were rarely applied by nurses in Lithuania.

Nurses working in emergency units were less likely to experience professional stressors than nurses working in medical and surgical units. However, more nurses working in emergency units reported work-related stress and behavior symptoms than their colleagues from other wards. Work experience of a nurse is an important factor for professional stress perception and coping during such a critical situation as COVID-19.

### Statement of Conflict of Interest

The authors state no conflict of interest.

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*Received October 2021*

*Accepted December 2021*