Original Article

Stress and Coping Strategies among Frontline Nurses during the COVID-19 Pandemic in Vietnam

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Abstract:

Objective: This study was conducted to describe the stress situation, the coping strategies and the effective support measures to manage the stress of nurses in South Vietnam for coronavirus disease-2019 (COVID-19) prevention and control.

Material and Methods: The cross-sectional descriptive study design was used to achieve the objectives. Research measurements were adapted, based on the scale provided by Zhang et al. (2021). There were 355 nurses from medical facilities in the North and Central regions participating in the support of South Vietnam against the COVID-19 epidemic, who completed the online survey.

Results: The reported stress rate was 51.5%, with the most common nursing stressors being homesickness (84.2%) and discomfort caused by protective equipment (83.9%). The most commonly reported coping methods by nurses were taking preventive measures (98.6%), adjusting their attitude and facing the COVID-19 epidemic positively (96.6), actively learning about COVID-19 (94.6%), and chatting with families and friends (91%). The coping strategies considered the most effective included; encouragement from family, relatives and colleagues, being fully equipped with knowledge and skills to participate in epidemic prevention and control and timely provision of personal protective equipment.

Conclusion: The nurses experienced significant stress, and the most frequently reported stressors were family related. Hence, social support interventions should be organized to improve the mental health of frontline nurses during the COVID-19 pandemic.

Keywords: coping strategy, COVID-19, mental health, nurses, stress

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Introduction

The coronavirus disease–2019 (COVID–19) pandemic is a public health emergency that has been posing unprecedented challenges to the global health system.[1] For a long period of the pandemic, most of the medical facilities in a state was overloaded. Frontline healthcare workers have gone through one of the toughest, most arduous times in their careers. COVID–19 has aslo created particular challenges; resulting in increased mental health problems among frontline healthcare workers.

Nurses play an important role in the health system's response to the COVID–19 pandemic, as they are one of the frontline groups of health workers directly involved in the treatment and care of patients.[2,3] During the process of participating in epidemic prevention and control, nurses are under constantly high psychological pressure, because they face a very high risk of infection from SARS–CoV–2. This makes them fearful for the safety of their own health, family members and patients.[2,4] The report of the International Council of Nursing (ICN) showed that by October 2020, a total of 1,500 nurses died due to COVID–19 in 44 countries worldwide. The ICN also asserted that this number is considered lower than the actual number of deaths.[5]

There have been many studies evaluating the stress status of nurses during COVID–19 prevention and control, with these results indicating that the prevalence of this health problem within the nursing community was very common. A systematic review and meta–analysis by Abin Varghese et al. of 25 studies published in 2020 found that the nursing stress rate during COVID–19 was 40.6%.[6] The report of Mohammed and colleagues in a systematic review and meta–analysis of 40 studies found a stress level of 43% being reported.[7] Manifestations of work–related stress and nursing behavior during COVID–19 are diverse. Physical manifestations were neck, shoulder, and lumbar pain; while mental manifestations were insomnia, decreased concentration. The emotional manifestations were irritability, impatience, and behavioral manifestations were the appearance of negative habits; such as smoking or alcohol consumption.[8]

Although stress has been illustrated to be a fairly common mental health condition among nurses during the COVID–19 pandemic, research data on coping strategies with this health problem were inadequate. Several studies reported on nurse coping strategies for general health problems.[8,9] A systematic review in 2021, of 10 studies found that nursing coping strategies during the COVID–19 pandemic included using COVID–19 protective measures, social support, faith–based practice, psychological support and management.[10] In addition, there was insufficient understanding of nurses' perceptions and perspectives on effective supportive factors to address stressors and burnout during the COVID–19 pandemic.

During the 4th COVID–19 outbreak, Vietnam recorded nearly 600,000 cases (from April 27 to September 10, 2021); mainly in the Southern provinces. To solve the problem, the Vietnamese Government called for the volunteering of delegations of medical staff from North and Central Vietnam to support the South in the prevention and control of the COVID–19 epidemic. Thousands of nurses from medical facilities in the Northern and Central provinces participated in supporting the South to fight the epidemic. The nurses coordinated with other health workers to carry out a series of activities; such as, screening, isolation, taking samples for testing, infection prevention and control, vaccination, monitoring as well as care and spiritual support for patients. This is the first time since the COVID–19 pandemic appeared that the government motivated a large medical workforce to support the prevention and control of the situation. However, data on stress and coping strategies in this nursing group are very limited.[11] Therefore, the objectives of this study were to: (i) describe the stress situation of nurses in the North and Central regions to support the prevention and control of COVID–19 in South Vietnam; (ii) coping strategies; (iii)

perception of effective support measures to manage the stress of this group.

Material and Methods

Design

This descriptive study employed a convenience sampling technique to recruit the participants through the target population.

Research setting and participants

The participants of the study were nurses from the Northern and Central provinces of Vietnam, who participated in providing aid to the Southern provinces of Vietnam to prevent and control the COVID-19 epidemic during the 4th outbreak; from April to October 2021.

Selection criteria were nurses who: (1) participated in supporting the Southern provinces to fight the epidemic; (2) were directly involved in the care and treatment of infected patients; (3) were and had finished their time of providing support for COVID-19 prevention and control within 30 days (including the quarantine period) by the time of participating in the survey.

The study was carried out from September to December 2021; for which, the data collection period was in October 2021.

Sample and sampling

Using the formula for a cross-sectional descriptive study:

$$n = Z^2_{(1-\alpha/2)} \frac{p(1-p)}{(\varepsilon p)^2}$$

Where: n is the number of nurses. Z (1-α/2) is the Z value obtained from the Z table corresponding to the α value. In this study, α=0.05 with Z (1-α/2)=1.96. p: estimates the stress rate of nurses during COVID-19; according to the previous study, p=0.466 [11]. ε: relative accuracy, in this study, choose=0.1. Substituting from the above formula to calculate n=309 people. Having an estimated 10% of the participants withdrawing from the study, the required sample size was 340 nurses. Finally, 355 nurses, having met the inclusion, criteria participated in the study.

Using the convenience sampling method to select participants in the study, invitations to participate in the study and complete the survey were sent to nurses participating in the prevention and control of COVID-19 through various channels (Refer to data collection for details).

Research measurements

General information regarding the research participants consisted of: demographic information, employment position, working time/day and duration of participation in epidemic prevention and control.

The measurement of stress assessment, coping strategies and perspectives on effective support factors for stress management were built based on the measurements of Zhang et al. (2021).[8] The questionnaire consists of 3 components:

The COVID-19 stress assessment scale includes 20 questions regarding stressors for nurses, with an optional response scale of 0=not at all; 1=slightly; 2=moderately; 3=very much; the lowest total score on the scale is 0, and the highest is 60 points. The way to determine the cut-off point of the scales used in this study was not mentioned by the authors;[8] additionally, the guidelines for determining the cut-off point of the Likert scale were not clear. In this study, it was proposed that the classification of the component and total scale were as follows: use the mean of the total scores of each question to rank the stress situation among nurses in the COVID-19 pandemic. Accordingly, the higher the average score, the greater the risk of stress. The test results indicated that the stress scale had a normally distributed asymptotic distribution, with a mean value of 31.06 and a median value of 31. Therefore, the value of 31

was used as the cutoff point for the stress scale to divide the participants into 02 groups of: the stress group (≥31) and not too stressed group (≤30).

The scale of coping strategies includes 14 questions regarding the ways nurses cope with stress during COVID-19: classified on 4 levels: 0=almost never; 1= sometimes; 2=often; 3=almost always. The total score ranged from 0 to 42. The average value of the total score of each question to rank coping strategies was used. Accordingly, the strategy with the higher average score is used more often by nurses.

The perspective scale on effective support measures includes 11 questions to assess nurses' personal views on effective support measures to manage stress when participating in COVID-19 prevention and control. There are 4 levels of effectiveness (0=not effective; 1=mildly effective; 2=effective effective; 3=very effective). The total score ranged from 0 to 33. The average value of the total score of each question to rank effective support measures was used. Accordingly, the measure with the higher average score, the more effective measure was used by nurses.

The instruments used for the study were originally in English and translated into Vietnamese according to World Health Organization guidelines (2015). A pilot survey with 38 nurses supporting the Southern epidemic prevention and control, according to the selection criteria above, was performed to check the reliability. The analysis results showed that the Cronbach Alpha coefficient of the stress scale was 0.91; Cronbach's alpha coefficient of the scale of coping strategies was 0.84; Cronbach's alpha coefficient of the scale of perceived effective support measures was 0.91.

Data collection

The KoBoTool Box application was used to conduct online data collection. The link to participate in the survey was at: https://ee.kobotoolbox.org/x/WrBm4zJm. The invitation to participate and research measurement was sent to the heads of the medical delegations of the North and the Central region participating in the Southern hospital's fight against COVID-19, and asked this group of people to transfer the survey link to the nurses in the group. Moreover, the invitations and research measurements were also sent to nurses through the chief nursing officers that have delegations of medical staff from the South for COVID-19 prevention and control. The invitations and research measurements were sent to nurses through social media channels; such as. Zalo, Facebook, etc. A total of 355 (more than the minimum sample size calculated above) nurses were in the selection criteria.

Data analysis

Analyzes were performed using IBM-SPSS, version 20.0. The frequency distribution tables and percentages were used to describe nursing stress status, gender and education level. The mean and standard deviation were used for the variables of age, the number of days attended and working time/day when spending on epidemic prevention and control of nurses. The mean and ranking analyses were used to analyze variables of stressors, coping measures and views on supportive measures.

Ethical considerations

Ethical approval was provided by the Biomedical Research Ethics Committee of Nam Dinh University of Nursing under Certificate No. 2173/GCN-HDĐ, dated October 1, 2021. The implementation process ensured compliance with the ethical principles outlined in the Declaration of Helsinki of 1975; as amended in 2000.

Results

Participants characteristics

A total of 355 nurses who met the selection criteria to participate fully answered the survey. The mean

age of the participants was 32.4 years old (S.D.=5.7, range=22–51). Among the participants, men accounted for 55.5%, and three-fourths of the participants were married. Regarding education level about half of them had a university degree or above. The average number of days participating in COVID–19 epidemic prevention and control was 51.9 days (95% CI: 49.9–54.1): the lowest was 8 and the highest was 150 days. The average working time/day was 8.2 hours/day (95% CI: 8.01–8.33): the lowest was 6 hours/day and the highest was 12 hours/day.

The stressful status of nurses participating in the COVID–19 epidemic prevention and control.

The 20–question stress scale measured nurses' stress situation during the COVID–19 pandemic. Of the total stress, the participants reported the most stressful situations included: discomfort caused by protective equipment,

homesickness, the danger to family members, worried about getting infected and hearing about health workers getting infected or dying from infection (Table 1). The median value was used to determine the scale cutoff, as described in the methods section. This study confirmed that the nursing stress rate in COVID–19 was 51.5% (Table 2).

Coping strategy

The most commonly used stress coping strategies by nurses included: taking preventive measures, actively learning about COVID–19, adjusting attitudes and facing COVID–19 in a positive way, actively learning professional knowledge, chatting with family, friends and colleagues. Less commonly used strategies included: keeping themselves busy, practicing relaxation methods, taking complementary medicine and relieving emotions by crying and or screaming (Table 3).

Table 1 The most stressful factors for nurses (n=355)

Items	Mean	Rank
Discomfort caused by protective equipment	2.3	1
Homesickness	2.2	2
The epidemic may endanger my family members	2.2	3
Worrying I might get infected myself	2.1	4
Hearing about hospital workers who were infected or died	2.0	5
High work pressure	2.0	6
Patient's condition worsening	1.9	7
Unsure how long the current working status will last	1.7	8
Uncertainty about when the epidemic will mitigate	1.7	9
I may endanger my colleagues and patients due to my carelessness	1.6	10
Wearing protective equipment for a long time will damage/damage the skin	1.5	11
Patient's emotional response	1.5	12
Delivering suboptimal nursing care because of the inconvenience associated with wearing protective equipment	1.4	13
Concerned about not having enough manpower	1.4	14
Self and co-workers have COVID–19–like symptoms	1.1	15
Concerned about inadequate knowledge and ability to handle work	1.0	16
Conflict between personal responsibility and personal safety	1.0	17
I can burden my colleagues with physical weakness	0.9	18
Lack of personal protective equipment	0.9	19
I may not work well with new colleagues	0.6	20

COVID–19=coronavirus disease–2019

Table 2 Classification of stress status of frontline nurses in the Southern hospitals for COVID–19 epidemic prevention and control (n=355)

Stress status	Number	%
Yes	183	51.5
No	172	48.5

COVID–19=coronavirus disease–2019

The perspectives on effective supportive measures to manage stress

Almost of the supportive methods given in this study were perceived as effective by the nurses. For which, the most effective methods were: encouragement from family, relatives and colleagues; timely provision of personal protective equipment; equipped knowledge and skills and clear guidelines of their activities (Table 4).

Table 3 Coping strategies of frontline nurses (n=355)

Items	Mean	Rank
Taking preventive measures (handwashing, wearing face masks, taking the temperature, etc.)	2.9	1
Actively learning about COVID–19 (symptoms, route of transmission)	2.6	2
Adjusting the attitude and facing the COVID–19 epidemic positively	2.5	3
Actively learning professional knowledge (including ECMO, ventilator, etc.)	2.4	4
Chatting with families and friends	2.4	5
Recreational activities (music, sports, safari, etc.)	2.1	6
Engaging in health–promoting activities (proper rest, exercise, balanced diet)	2.1	7
Seeking psychological support from colleagues	1.9	8
Seeking information regarding mental health	1.4	9
Expressing concerns and needs to supervisors	1.4	10
Keeping myself busy to refrain from thinking about the epidemic	1.4	11
Practicing relaxation methods (meditation, yoga, Taiji, etc.)	1.2	12
Taking adjuvant medication (sleep helper, etc.)	0.6	13
Releasing emotions by crying, screaming or throwing items	0.3	14

COVID–19=coronavirus disease–2019, ECMO=extracorporeal membrane oxygenation

Table 4 Effective support measures (n=355)

Items	Mean	Rank
Encouragement from family, relatives, colleagues	2.7	1
Timely provision of quality and quantity of personal protective equipment	2.6	2
Fully equipped with knowledge and skills to participate in epidemic prevention and control	2.6	3
Have clear workflows and instructions	2.5	4
Get professional support during work	2.5	5
There are support policies for relatives	2.4	6
Enough time to rest and regenerate labor	2.3	7
Get financial support and social welfare when participating in epidemic prevention and control	2.3	8
Honored and rewarded	2.2	9
Provide nutritious meals and food safety and hygiene	2	10
Available psychological support services	1.8	11

Discussion

The mental health of nurses during the COVID-19 pandemic was critical, as this may affect their performance and reduce the quality of care provided.[8] This study aimed to examine the stress status and investigate the coping strategies nurses used to relieve their stress. This information may provide evidence for administrators to provide appropriate support to nurses involved in COVID-19 prevention and control.

The results of this study revealed that the stress status of nurses was quite severe; whenin more than half of the nurses were classified as being stressful. This result was higher than the results of previous studies as less than half of them had a stressful situation.[6,7,11] The difference may be explained by the diversity of rating scales, health care systems, disease severity, resource constraints, population and lifestyle characteristics. In addition, there was heterogeneity in determining the cut-off point of each scale to classify pre-existing conditions.[7] Another possible reason was that nurses in this study had to travel thousands of kilometers away from their families to participate in epidemic prevention and control. This was a very different point from previous studies. Thus, the results of the present study, in correlation with previous studies, were consistent with the view that nursing stress during COVID-19 was very common, and much higher than the prevalence compared to the general population in the same period.[12]

The impact of stress at work has been shown to be linked to the occurrence of physical and mental health problems. High and prolonged stress levels may reduce employee performance as well as negatively affect their attitudes and behaviors.[13] It is therefore important to identify the causes and prevalence of nursing stress during COVID-19, as this may help protect the workforce and improve the quality of service delivered to patients. Loneliness has been shown to be a major stressor for nurses working in isolation wards during outbreaks.[14,15]

Consistent with previous findings, this issue was highlighted among the current study participants. The nurses in this study had to travel thousands of kilometers away from home to support the South to fight the COVID-19 epidemic. They had to separate from their families and stay in designated hospitals to take care of the patients, and there were even people who had to be away from home for months. Nurses reported that "Homesickness", and "The epidemic may endanger my family members" were the factors causing the most stress for them. This result was consistent with the study of Zhang et al. (2020).[8] The result suggested that in order to reduce the stress of nurses during COVID-19, the Government should have appropriate policies for their family members. Their family members should be prioritized in vaccination during scarce vaccines. The leaders of their institutions should consider visiting and encouraging their families while they were not at home due to COVID-19 prevention and control. Moreover, the Government may provide social benefits and prioritize the use of public services for their families. The hospitals or clinics where nurses provided the COVID-19 prevention and control activities may arrange their reasonable working time for short breaks, long lunches and dinner breaks. Therefore, the nurses could have time to communicate with their families, via phone or other appropriate social media channels. In addition, hospitals may also organize social activities, and recreational facilities (television, exercise equipment, sports) to reduce their stress.

The human-to-human transmission characteristics of COVID-19 resulted in two stressors for nurses. The first being related to labor protection equipment; to protect themselves and reduce the risk of cross-contamination, nurses must always wear protective gear during work. This may cause unpleasant sensations, damage the skin and reduce the effectiveness of care.[8,9] Consistent with previous findings in this study: "Discomfort caused by protective equipment", was rated by nurses as the

most stressful factor for them during COVID-19. The second was related to the risk of infection. In this present study, the stressor: "Worrying I might get infected myself", ranked 4th among the studied agents. Additionally, "Hearing about hospital workers who were infected or died", also exacerbated concerns about being infected (ranked 5th). This result was also consistent with many previous reports.[8,17] The results suggested that it was necessary to provide nurses with good quality protective gear, and skin protection devices to reduce pressure and discomfort associated with protective equipment. Besides, as mentioned above, the hospitals or clinics should schedule a reasonable rest time for the nurses to recover their energy. In addition, psychological support services should also be provided to nurses to reduce their anxiety and stress.

To manage stress during COVID-19, nurses used a variety of coping strategies. In their meta-analysis, Sehularo et al. reported that nurses' coping strategies during COVID-19 included: avoidance strategy, social support, faith-based practices, psychological support and management support.[10] The results were consistent with the above findings. Most of the nurses used the 14 suggested coping strategies, which focused on methods for personal protection (using protective gear), improving knowledge and skills, enhancing communication with family and colleagues, having a positive attitude towards the epidemic, etc. Research results indicated that a very low percentage of nurses used negative coping strategies; such as, taking adjuvant medication (sleep helper); emotions by crying, screaming or releasing items. Meanwhile, the study of Cui et al. illustrated that up to 49.5% of nurses had negative coping behaviors.[18] There was evidence that during emergencies, negative coping was associated with lower psychological endurance, lower cognitive control and a higher risk of stress.[19] In addition, nurses' positive attitudes towards working conditions significantly contributed to their coping ability.[20] This implied that the higher the negative emotion, the greater the impact of the stressors, and thus the more coping strategies were used. To solve the problem, it is necessary to provide appropriate support measures to nurses to stay in a positive mental state in the face of the COVID-19 outbreak.

This implied that the higher the negative emotion, the greater the impact of the stressors and the more coping strategies were used. To solve the problem, besides arranging a reasonable rest time for nurses to recover their energy and communicate with their families as well as providing them with quality protective equipment, the Government, the health sector management as well as hospitals should pay more attention to enhancing their knowledge and skills in pandemic prevention and control by developing clear work procedures and implementation guidelines. The hospitals or clinics should have a plan to rotate shifts so as to reduce stress and fatigue for medical staff in general; and for nurses in particular.

In addition to examining nurses' self-help approaches, this study explored their perception of effective supportive measures in response to COVID-19. The results indicated that most of the proposed support measures were evaluated as effective. The most appreciated support measure was: "Motivation from family, relatives and colleagues". This result was consistent with previous findings in Qatar, China and the US.[21-23] Social support was one of the most effective means by which people may cope with stressful events, and it may come from spouses, loved ones, friends, co-workers or the community.[10] With social support received, nursing stress responses may be significantly minimized. Ali et al. recommended that to reduce stress during COVID-19 nurses should talk to loved ones via video or receive individual therapy at least once during their shift.[23] Therefore, it is necessary to strengthen support measures for nurses during the COVID-19 outbreak; with a focus on appropriate social support.

Limitations

There were some limitations in this study. The convenience sampling method may reduce the generalizability of the results of this study. In addition, this study was a cross-sectional observational study; therefore, it is not possible to assess the short-term and long-term psychological effects of the frontline nurses in the fight against the epidemic.

Conclusion

This is the first study in Vietnam to study stress, coping strategies and perspectives on effective support measures of nurses in the Southern hospital against COVID-19. The results showed that nurses' stress during the COVID-19 pandemic was very common. The main factors contributing to the stress situation were related to homesickness and protective equipment. Many stress coping strategies were used by nurses, with a focus on positive strategies of personal protective equipment compliance and learning knowledge and skills. Social support interventions, provision of adequate means of personal protection, and improved knowledge and skills to deal with COVID-19 should be considered to support frontline nurses.

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Conflict of interest

The authors declare that there is no conflict of interest.

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