FACTORS RELATED TO THE STRESS AMONG NURSES AT LAM DONG II HOSPITAL AND LAM DONG CHILDREN'S HOSPITAL IN THE COVID - 19 SITUATION

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ABSTRACT

Objective: *Describe the stress level and factors related to the stress status among nurses at Lam Dong II Hospital and Lam Dong Children's Hospital.* ***Participants and methods:*** *A cross-sectional descriptive study design was conducted on 415 nurses working at Lam Dong II Hospital and Lam Dong Children's Hospital, who directly participated in the COVID-19 epidemic prevention and control. Data was collected by self-reported form through the DASS-21 questionnaire from January to September 2022.* ***Result:*** *The rate of nursing stress at mild, moderate and severe levels was 42.3%, 28.9% and 6.1%, respectively. The study identified a number of factors that were statistically significantly related to the stress status of nurses, including Personal factors (age, seniority, physical activity), Work (work stability, overtime duration). Working environment (frequency of exposure to bad attitudes of patient's family), Encouragement at work.* ***Conclusion****: The percentage of nurses showing signs of stress was quite high at 77.4%. It is necessary to have policies and regimes to reduce stress and improve the health and psychological well-being of nurses.*

Keywords*: Stress, Nursing, COVID-19*

1. INTRODUCTION

According to the World Health Organization (WHO), mental health is the foundation for the well-being and effective functioning of individuals. Mental health is not only a state of being free of mental disorders but also includes a state of comfort, confidence in one's own abilities, self-control oneself [1]. The COVID-19 pandemic caused by the SARS-CoV-2 virus has been causing far-reaching economic, political and social impacts [1], [2]. For a long time, most medical facilities where there was an epidemic, were always in a state of overload. Frontline medical workers have gone through one of the most difficult, arduous times of their careers. COVID-19 has created particular challenges resulting in increased mental health problems among frontline healthcare workers [2].

As of April 2021, the US recorded 3067 deaths of healthcare workers due to COVID-19, in which nursing staff accounted for the highest rate (32%) [3]. Nursing is a job of occupational burnout [4]. The outbreak of the COVID-19 pandemic has increased this nature of occupational burnout and threatens the physical, mental

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Received: Nov 29, 2022
Accepted: Dec 28, 2022
Published: Dec 29, 2022

health and ability of nurses to work. Research results in Northwest Ethiopia during the COVID-19 epidemic period (September - October 2020) on 302 nurses gave the rates of anxiety, depression and occupational burnout at 69.6%, 55, 3% and 20.5%, respectively [4]. In 2020, a systematic review conducted in 2020 with 16 studies, with 18,935 nurses, showed overall rates of emotional burnout, personality breakdown, and decline individual achievement are 34.1%, 12.6% and 15.2%, respectively [3].

During the 4th outbreak, the number of patients with COVID-19 from April 27, 2021 to August 31, 2021 in Vietnam increased 503 times compared to the total number of patients in the previous period [5]. During the process of participating in epidemic prevention and control, nurses are under constant and high psychological pressure because they face a very high risk of infection with SARS-CoV-2. During the period from April to May 2020, the occupational burnout rate of nurses reached 34.3% [6]. A study on 87 nurses participating in the prevention of COVID-19 from March to June 2020 at 8 hospitals in Hanoi showed signs of anxiety, stress and depression at 19.5%, 8% and 5.7%, respectively.

Although stress has been shown to be a fairly common mental health condition among nurses during the COVID-19 pandemic, studies evaluating nurses' stress status in the context of COVID-19 in Vietnam, especially in Lam Dong provinces, have not been carried out. These studies and surveys have not been able to provide sufficient practical scientific evidence for the overall psychological disorder in nursing due to COVID-19. For the above reasons, the study was carried out with the following objectives describe the stress level of nurses and identify some factors related to the stress status of nurses in some hospitals in Lam Dong province in the context of the COVID-19 pandemic.

2. PARTICIPANTS AND METHODS

2.1. Research participants: The participants of the study were nurses who participated in the prevention and control of COVID-19 at a number of hospitals in Lam Dong province.

Selection criteria: Nurses participate in epidemic prevention and control in clinical facilities in Lam Dong province and implement Resolution No. 128/NQ-CP of the Prime Minister.

- Nurses worked at Lam Dong II Hospital, Children's Hospital of Lam Dong Province.

- Nurses participated in one or more of the following tasks of screening, classifying; taking samples for testing; vaccination; infected patient care.

Exclusion criteria: The nurse was not present during the study period.

2.2. Time and place of study: The research was conducted during the period from January to September 2022.

Research location: Lam Dong II Hospital, Children's Hospital of Lam Dong province.

2.3. Research design: Cross-sectional descriptive study.

Sample Size: Apply the formula to calculate sample size:

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

In there:

- n: study sample size

- p: Estimating the nursing stress rate in the context of the COVID-19 epidemic.

According to Nguyen et al. [7], p = 0.437, $Z_{\alpha/2}$ = 1.96 with 95% confidence coefficient and α = 0.05, d: desired error, choose d = 0.05.

The estimated sample size needed for the study is n = 378.

A total of 415 nurses met the selection criteria and agreed to participate in the study.

The sampling method was used convenience sampling method.

2.4. The method of data collection.

Google Forms application was used to implement online data collection. The research team sent invitations and research questionnaire to the Head Nurses of the Hospital and asked the Nursing Department to transfer the survey link to the nurses directly involved in the prevention and control of the COVID-19 epidemic.

The quantitative data collection questionnaire was a self-reported questionnaire, which was developed by the research team, based on research objectives and variables consisting of 6 areas with 36 questions, including (1) Personal characteristics, (2) Family factors, (3) Job information, (4) Working environment; (5) The level of work encouragement and (6) The level of stress through the DASS scale.

The DASS-21 scale (Depression, Anxiety, Stress Scale – 21) is a questionnaire used to assess the stress state of research participants by assessing how often they have feelings such as "I find it difficult to relax", "I find it difficult to comfortable" or "I find myself excitable",…

The scale consists of 21 questions divided into 3 parts, corresponding to each part is 7 questions with the DASS component. Each question has 4 answer options, scored on a Likert scale of 0-3 points depending on the severity and duration of symptoms. The score corresponding to the level of stress expression of Normal 0-14, Mild 15-18, Moderate 19-25, Severe 26-33, Very severe ≥ 34.

2.5. Data analysis

Data were entered and processed using SPSS 20.0 software.

- Frequency (n) and rate (%) were used for categorical variable description; Mean, median, and standard deviation values were used to describe the quantitative variable.

- Statistical analysis with the square/ Fisher exact test was used to find out factors related to the stress status of nurses. The results are presented as OR, 95% CI and statistical significance level $p < 0.05$.

2.6. Ethics in research

The study was approved by the Ethics Council in Biomedical Research of Nam Dinh University of Nursing under the certificate No. 966/GCN-HDDD dated April 13, 2022.

3. RESULTS

The study showed that the average age of 415 nurses participating in the study was 35 (± 13.5) and the group aged 35 and under accounted for 67.0%. The majority of nurses participating in the study were female (68.0%). More than half of the nurses participating in the study had less than 10 years of experience in the medical field (52.6%). Regarding the frequency of physical activity, the majority of the study participants never participated in any activities (60.8%) and only 4.1% participated regularly. On the other hand, only 1.0% of respondents did not use social networks for entertainment and 92.8% of respondents used social networks < 3 hours/ day.

Table 1. Stress level of nurses (n = 415)

Stress level	Total		Stress point	
	n	%	Medium	SD
Normal (0 - 14 points)	94	22.7	8.8	4.7
Mild (15 - 18 points)	176	42.3	16.6	0.9
Medium (19 - 25 points)	120	28.9	21.1	1.5
Heavy (26 - 33 points)	25	6.1	28.0	< 0.01
Very heavy (≥ 34 points)	0	0	0	0
Stress point			**16.9**	**5.8**

Table 1 showed that of the 415 nurses involved in the study, 42.3% of the participants had mild stress, 28.9% had moderate symptoms, and only 6.1% expressed in severity according to the DASS-21 scale.

Table 2. The relationship between personal factors and the stress level

Variable	Stress				p	OR
	With stress		Without stress			
	n	%	n	%		
Age						
35 years old	257	92.3	21	7.7	< 0.001	13.6 (4.3 – 42,8)
> 35 years old	64	46.9	73	53.1		
Sex						
Female	231	81.8	51	18.2	0.123	2.1 (0.8 – 5.7)
Male	90	67.7	43	32.3		
Working years						
<10 years	205	94.1	13	5.9	< 0.001	11.3 (3.1 – 41,6)
10 years or more	116	58.7	81	41.3		
Physical activity						
Not engaged	237	94.2	15	5.8	< 0.001	11.9 (3.2 – 44,1)
Engaged	94	57.8	69	42.2		
Time to use social networks for entertainment in a day						
Usually use	22	83.3	4	16.7	0.716	1.5 (0.2 - 13.6)
Do not use often	299	76.9	90	23.1		

The nurses under 35 years old had a 13.6 times higher risk of stress than women above 35 years old (CI95%: 4.3 - 42.8; p < 0.001). Compared to the nurses with 10 years of

seniority or more, nurses with less than 10 years of experience in the health sector had 11.3 times the risk of stress (CI95%: 3.1 - 41.6; p; p < 0.001). At the same time, those who did not participate in physical activity had an 11.9 times higher risk of stress than those who did (CI95%: 3.2 - 44.1; p < 0.001).

Table 3. Relationship between work and stress

Variable	Stress				p	OR
	With stress		Without stress			
	n	%	n	%		
Degree of job stability						
Stability	253	84.3	47	15.7	0.008	3.7 (1.4 – 10.0)
Unstable	68	59.3	47	40.7		
Overtime (day/week)						
Overtime available	296	85.2	51	14.8	< 0.001	9.6 (2.9 – 31.3)
No overtime	26	37.5	42	62.5		
Level of satisfaction with the job						
Unsatisfied & Relatively Satisfied	278	81.3	64	18.7	0.045	3.0 (1.0 – 9.3)
Satisfied	43	58.8	30	41.2		

The nurses who had to work overtime were 9.6 times more likely to be stressed than those who did not have to work overtime (CI95%: 2.9 – 31.3; p<0.001). Compared to the nurses who satisfied with the job, the dissatisfied and relatively satisfied nurses had a 3.0 times higher risk of stress (CI95%: 1.0 -9.3; p<0.05). Notably, nurses who rated their current job as stable had a high risk of stress.

Table 4. The relationship between the working environment and the stress among nurses

Variable	Stress				p	OR
	With stress		Without stress			
	n	%	n	%		
Frequency of exposure to disease/injury risk						
Sometime	188	72.1	73	27.9	0.112	0.4 (0.1 – 1.2)
Frequent	133	86.1	21	13.9		
Frequency of facing bad attitude of patient/patient's family						
Occasionally & Often	308	84.7	13	15.3	< 0.001	16.6 (4.0 – 69.7)
Never	13	25.0	38	75.0		

Variable	Stress				p	OR
	With stress		Without stress			
	n	%	n	%		
Frequency of participating in activities organized by the department/ hospital						
Not engaged	82	79.2	21	20.8	0.803	1.2 (0.4 – 3.6)
Engaged	239	76.7	73	23.3		
Frequency of contact with patients with symptoms similar to SARS-CoV2						
Contacted	316	77.9	90	22.1	1.0*	3.5 (0.2 – 58.7)
No contacted	5	50.0	4	50.0		

**Fisher exact (test)*

Nurses who often faced bad attitudes of patients/patients' family members had a 16.6 times higher risk of stress than nurses who did not (CI95%: 4.0 - 69.7 ;p < 0.001).

Table 5. The relationship between the level of encouragement at work and the stress status of nurses

Variable	Stressful state				p	OR
	With stress		Without stress			
	n	%	n	%		
The degree of matching between income and labor level						
Not suitable	205	94.1	13	5.9	< 0.001	11.3 (3.1 – 41,6)
Suitable	116	58.7	81	41.3		
Level of satisfaction with encouragement from the hospital						
Unsatisfied	312	83.9	60	16.1	< 0.001	20.9 (4.0 - 108.8)
Satisfied	9	20.0	34	80.0		
Opportunities to learn, improve knowledge & professional qualifications						
With chance	316	82.2	69	17.8	< 0.001	27.8 (3.1 – 246.7)
Without chance	4	14.3	26	85.7		

The respondents indicated that the current income and labor levels were not suitable had a 11.3 times higher risk of stress than the group that felt suitable (CI95%: 3.1 – 41, 6; p < 0.001). In addition, nurses who felt dissatisfied with the form of encouragement from the hospital had a 20.9 times higher risk of stress than those who felt satisfied (CI95%: 4.0 - 108) ,8; p < 0.001). Notably, for nurses who rated the current working environment as having the opportunity to learn, improve their knowledge and professional qualifications, there was a 27.8 times higher risk of stress than the group without chance (CI95%: 3.1 – 246.7; p < 0.001).

4. DISCUSSION

The research results indicated that the level of stress with mildness accounted for 42.3%, moderate (28, 9%) and severe (6.2%), none of the nurses had very severe stress. This result is similar to the study of Kumar A (2016) and colleagues in India, which also showed that stress in pregnant women was mild (34.1%), moderate (17%) and severe (1.2%) respectively [8]. Previous studies in Vietnam used the DASS-21 questionnaire, most of the results showed a negative correlation between the two variables of stress level and the percentage of stressed participants. This is true both on the survey conducted in nurses in general and nurses/doctors in particular [5], [6], [8]. Different from the above study, Bui Thi Duyen (2020) showed that the results of the distribution of stress levels in nurses at Medlatec General Hospital were moderate (26%), mild (12.8%), severe (2.8%) (63). However, in general, the prevalence of moderate and severe stress in some provincial general hospitals is still higher than in Medlatec General Hospital [9]. On the other hand, it is a positive point that both studies at Medlatec General Hospital and some provincial general hospitals did not record very severe stress. This difference may be due to the sampling method, location and time of the study.

Regarding the correlation with individual factors, the research results are quite similar to the report that recorded the inverse relationship between stress and age and working seniority in the study surveying stress in women by SY Jin (2019) in Shenzhen, China [10], Hemmati F et al (2019) in Iran and Dau Thi Tuyet (2013) at Nghe An 115 General Hospital ($p < 0.05$) [9]. This can be explained that young nurses with short working experience often lack experience and are prone to making mistakes in their expertise. In order to achieve good work results and be recognized by the hospital, they must always try to learn, improve their professional knowledge, work hard, etc., contributing to promoting work motivation but also being weak factors causing pressure and stress for young nurses

For job situation, univariate analysis showed that the relationship between stress and overtime work, respondents felt satisfied with their work and self-perceived that their current job was stable. The nurses who had to work overtime had a 9.6 times higher risk of stress than those who did not have to work overtime (CI95%: 2.93 – 31.29, $p < 0.001$). Similarly, the research results in the group of clinical nurses with the results of Cai HL (2020) in China and Bui Thi Duyen (2020) at Medlatec General Hospital - Vietnam also showed that the higher the frequency of overtime, the higher rates of stress. The nurses did not have to work overtime having low rates of emotional stress [10]. In the context of the COVID-19 epidemic, the research results of author Nguyen Phuc Thanh Nhan (2020) in the frontline hospital showed that stress is related to longer working hours ((OR = 1,012; 95% CI: 1,004-1, 019) [7]. With the pressure of a private hospital, it has just come into operation with the motto of bringing peace of mind about professional qualifications and comfort with the care and attention of the medical team to patients. In addition, the constant fluctuation of new personnel leads to the fact that the working nurse must concurrently hold the position of an old colleague or guide new personnel on work and culture at the hospital. Therefore, in order to achieve high work efficiency and good evaluation from the managers, the nurse has to work overtime after a

tiring working day. This seriously affects health and physical health and increases stress and fatigue with nurses. In addition, at the hospital, the leadership does not have specific support policies and regimes for nurses working overtime. The above reasons lead to depression, reduced work motivation and increased risk of stress in nurses at provincial general hospitals.

Compared with the nurses who satisfied with the job, the dissatisfied and relatively satisfied nurses had a 3.0 times higher risk of stress (CI95%: 1 - 9.27; $p < 0.05$). This result is consistent with the research results of Teris Cheung and Paul SF Yip (2015) in Hong Kong NE[11]. Unsatisfied nurses may be depressed, lack motivation to work, tend to be disengaged, lack enthusiasm, responsibility for work, or have negative thoughts about colleagues and the work place compared to other nurses.

The nurses who self - reported their current job as stable had a 3.7 times higher risk of stress than those who considered their current job unstable (CI95%: 1.35 – 10.04; $p < 0.05$). Research by Mai Hoa Nhung (2014) in nurses working at the Central Hospital of Transport showed that nurses with unstable work have 3.2 times higher symptoms of stress than the others ($p < 0.05$) [12].

Limitations of the study: The cross-sectional descriptive study used a non-randomization sampling technique with a limited data collection period and the COVID-19 situation, the results reflects the stress level of nurses in the study area. The results may not be generalized, without cause-and-effect relationship, the main cause of this situation. The pre-designed questionnaire may be subject to error due to the cooperative attitude of the participating nurses.

5. CONCLUSION

The rate of nurses with symptoms of stress in some provincial general hospitals in Lam Dong province in 2022 was 77.4% (157 people). In which, the rate of stress nurses at mild, moderate and severe levels was 42.3%, 28.9% and 6.1%, respectively.

The study initially identified a number of factors related with statistical significance to the stress status of nurses at Lam Dong Provincial Hospital, including Personal factors (age, seniority, physical activity), Work (work stability, overtime), Working environment (frequency of exposure to bad attitudes of the patient's family), Encouragement at work. The results are the basis for building a prevention program to reduce stress and improve the health and psychology of nurses. The hospital needs to care, share and encourage with appropriate interventions for all staff in general and nurses with symptoms of stress in particular. Especially, the group has a high rate of stress (technicians, nurses, midwives).

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