

COPING STRATEGIES AMONG NURSING STUDENTS PARTICIPATING IN COVID-19 FRONTLINE PREVENTION IN VIETNAM

Anh Thi Lan Mai¹, Quan Trong Dao², Trieu Thi Thu Nguyen³, Thanh Thi Minh Nguyen⁴, Dau Van Vu¹, Nga Thi Nguyen⁵

¹Nam Dinh University of Nursing, Vietnam

²Thai Nguyen University of Medicine and Pharmacy, Vietnam

³Da Nang University of Medical Technology and Pharmacy, Vietnam

⁴Hue University of Medicine and Pharmacy, Vietnam

⁵Hai Duong Medical Technical University, Vietnam

Email: lananh@ndun.edu.vn

Abstract

Aims: An assessment of the coping strategies used by nursing students volunteering to prevention Covid-19 in Vietnam.

Background: Psychological well-being was affected both positively and negatively by volunteering for frontline prevention.

Design and Methods: A total of 471 frontline prevention volunteers were chosen through a random selection process that adhered to the inclusion criteria of a cross-sectional study design. The data were collected between October and December 2021. The demographic questionnaire, 6-item Kessler Psychological Distress Scale, Effective Support Measures Scale, and Brief Coping Orientation to Problems Experienced Inventory Questionnaire were utilized to measure the variables. Descriptive statistics and linear regression were the analytical methods employed for the data analysis.

Results: It was found that the students presented problem- and emotional- coping strategies during psychological distress. In addition to sex, vaccination, and family support, problem-coping strategies correlated significantly with each other ($p < 0.01$). Coping strategies were related to experience of being infected with Covid-19, as well as family support ($p < 0.05$).

Conclusion: It is imperative for lecturers and institutions responsible for nursing students to establish professional support teams. It is imperative that adequate support measures be put in place for nursing students who are at the forefront of preventing the spread of the epidemic. This will help them develop effective coping strategies to manage psychological distress.

KEYWORDS: Covid-19, Nursing students, frontline prevention, coping strategies, Vietnam.

INTRODUCTION

On July 27, 2022, the World Health Organization 2022 [1] disclosed that the COVID-19 pandemic is the gravest global health catastrophe of the current century. With a staggering number of over 574 million confirmed cases and 6.39 million fatalities worldwide, the situation remains an alarming concern. Initiatives for student volunteering have been discussed in Hong Kong [2–3], Singapore [4], and Saudi Arabia during the 2014 Middle East respiratory syndrome (MERS) outbreak, all in the context of severe acute respiratory syndrome (SARS) outbreaks. As some nursing students enter the departments responsible for epidemic prevention and control, the situation might become more problematic [6], or some nursing students may experience mental health stress or psychological issues such as fear, depression, anxiety, or a reduced quality of life [7-8]. The co-occurrence of constructive and destructive affective states was also the subject of discussion. Multiple research endeavors have been pursued to scrutinize the psychological responses of nursing learners who took part in the efforts to prevent and manage the Covid-19 epidemic.

People may have felt psychological anxiety about contracting the virus or spreading it to their family, friends, or coworkers in the early phases of the COVID-19 outbreak because they knew little about the virus and sickness [9]. Mental illnesses, including depression, anxiety, and PTSD, are more likely to develop in individuals who experience psychological discomfort. Particularly during emergencies, extreme stress can have a negative psychological impact on the workplace and hinder productivity [10]. Other students observed that the clinical setting during the Covid-19 pandemic was more demanding than usual, with words like anxious, busy, safe, challenging, fatiguing, rare, emotional, emotional crisis, heaviness, tension, strangeness, and psychological distress [11].

Coping is the thoughts and actions that a person uses when they encounter stressful life events [12]. There are many different coping strategies that people dealing with stressful situations use and are up to the perception of the researcher. Gloria and Steinhardt (2016) proposed that the implementation of positive coping strategies can lead to the emergence of favorable emotions and behaviors, which in turn may contribute to positive outcomes. Conversely, adoption of negative coping mechanisms may result in considerable psychological anguish [13]. The negative coping behavior of frontline nurses was positively correlated with psychological distress during the Covid-19 outbreak [14]. However, the studies demonstrated that negative coping styles had certain positive effects in reducing suffering, temporarily coping with difficulties and helping them get through difficult times and on to

success. According to Folkman (1987), there are two coping strategies of problem-focused coping and emotion-focused coping [15]. Depending on individual characteristics and stressful situations, people may choose problem-focused coping to solve the problem or take action to change the stress situation; or emotionally focused coping to reduce emotional distress.

Amid the COVID-19 pandemic, offering psychological assistance and maintaining consistent communication with students assumes a crucial significance. A research study has also highlighted a significant lacuna in this regard. Specifically, students expressed the desire for enhanced psychosocial support and emphasized the importance of establishing regular contact with a clinical supervisor. They find the necessary information on clinical websites, or discuss with the other nurses [16]. These findings suggested that the use of self-care approaches was associated with reduced psychological distress, and that integrating self-care practices into nursing curriculum may assist mental health support of students [17]. To face the COVID-19 pandemic, proactive prevention by vaccination is one of the top priority measures [18].

Vietnam has become one of the Asian nations that has been significantly impacted by the COVID-19 pandemic. With the rapid spread of the virus and a limited supply of vaccines, the government has been compelled to seek assistance from healthcare professionals and students who are willing to volunteer in areas that are experiencing the most severe impacts of the disease. At that time, although they had not been vaccinated against the disease, the thousands of healthcare students in the North and Central regions of Vietnam applied to volunteer to participate in the South, which was greatly affected by the pandemic in Vietnam at that moment. The aim of this investigation is to delineate the coping mechanisms employed by nursing students engaged in combating Covid-19 in Vietnam, along with the variables connected with these methods.

METHODS

Study Design

A cross-sectional design was utilized to examine the participation of Nursing students from Vietnam in epidemic prevention and control efforts.

Study Participants

Nursing students volunteered to help prevent and control Covid-19. Throughout the provinces, nursing students perform tasks assigned to them by their lecturers at health centers. For the nursing students to be included, they had to be currently involved in prevention and control activities, and they had to be free from serious physical or mental health

conditions. Participants were randomly selected based on the inclusion criteria for RAs.

Sample size

Calculating sample size is an imperative step in a research. In this study, sample size calculation was conducted with the aid of G*Power 3.1.9.2. The projected participation rate of nursing students in Covid-19 prevention and control measures is approximately 50% [5]. The minimum number of participants needed to achieve a 5% error rate and 99% confidence level was 325. Approximately 10% of the individuals involved in the study were projected to withdraw, with a target sample size of 358. The selection of participants was conducted through a multistage sampling approach. In Phase 1, it was opportune to identify universities with nursing students who had offered voluntary services to combat Covid-19 between the months of October and December. Research assistants from the identified universities were selected randomly while ensuring that the identities of the participants remained undisclosed. The questionnaire was completed by 471 participants who met the inclusion criteria until the end of December 2021.

Data collection

Data were gathered between October and December of 2021 for this study. Researchers assistants (RAs) supervise students throughout the prevention and control activities of Covid-19 at the universities where they work. The research instruments were taught to them online so that they could collect their data. At each university, RAs created groups of students who met the inclusion criteria through a mobile app (Zalo). Online data collection was conducted using the KoBoTool Box application. The participants were sent the link to the invitation, consent form, and questionnaire by the RAs. Participants were pre-notified; a reminder was sent to the Zalo group, and another reminder was sent to the lively participants to improve response rates [19].

The RAs involved in this study were nursing professors from both nursing and medical universities. The principal investigator provided instructions to these individuals to utilize various research tools in order to effectively measure outcome variables via an online platform, specifically through Zoom. Additionally, RAs were called upon to offer support to the researcher during the process of initiating the randomized sample procedure.

Measurements

Data was collected using three self-reported questionnaires. In addition to demographic data, Kessler Psychological Distress Scale and Brief COPE Questionnaire were administered.

Demographic characteristics such as age, sex, study year, vaccination against Covid-19, having ever been infected with the disease, and having

relatives or friends infected with it. Students were also evaluated based on how many times they volunteered for Covid-19 prevention and control as well as their families' support.

Participants' coping strategies were assessed using the Brief COPE Questionnaire [20]. The questionnaire consisted of 28 items that were classified under three domains, namely emotion-focused coping, problem-focused coping, and avoidant-focused coping. The responses were evaluated on a 4-point Likert scale that included the categories never, rarely, occasionally, and often. The subscale scores ranged from 0 to 32 for problem-focused coping, 0 to 48 for emotion-focused coping, and 0 to 32 for avoidant coping. Higher scores indicated an active attempt to modify stressful situations, regulate emotions connected with those situations, or disengage from sources of stress. Vietnamese respondents found the Brief COPE Questionnaire scale to be highly valid [21].

Participants were assessed for psychological distress using the Kessler Psychological Distress Scale [22]. Originally, this scale was used to screen university students for serious mental illnesses. The members of a research group modified the scale to ensure that they could consistently assess all students during the Covid-19 situation. Participants evaluated six psychological symptoms associated with Covid-19 prevention and control measures within the preceding 30 days. These symptoms included emotions such as "nervousness," "hopelessness," "restlessness or agitation," "depression to the point of being impossible to cheer up," "feeling like everything is an effort," and "worthlessness." The questionnaire was assessed using a 5-point Likert scale denoting responses of "never," "rarely," "sometimes," "often," and "always." Each question was scored between 0 and 30, obtained by adding up the scores for all the questions. According to the overall score of 0-12, students had a low risk of psychological distress (low distress level), whereas those with a high distress level (high distress level) had a high distress level. Cronbach's alpha for the 6-item Kessler Psychological Distress Scale was 0.84, demonstrating high reliability [22]. It has been demonstrated that this scale is highly valid among Vietnamese [23].

An assessment was conducted to gauge the views of nurse trainees with regards to efficient measures of support. The evaluation comprised of eleven queries that centered on psychological angst and the prevention as well as control of COVID-19. Effectiveness was rated on a scale of 0 to 3, with 0 being non-effective, 1 being mildly effective, 2 being effective, and 3 being highly effective. A total score of 0–33 was assigned. The effective support measures were ranked based on their average total scores. Consequently, the measure with a higher average score was deemed by the nurses to be more efficacious.

Creative Commons (CC BY) was used to publish the measurements. The author team committed to strictly comply with the terms of the open

access policy. The study used English instruments that were translated into Vietnamese according to WHO guidelines (2015). Based on the selection criteria above, we conducted a pilot study of 38 nursing students who supported Southern epidemic prevention and control. A Cronbach's alpha coefficient of 0.820 was found for the psychological distress scale. A Cronbach's alpha coefficient of 0.790 was obtained for the brief COPE questionnaire. The scale of perceived effective support measures had an alpha coefficient of 0.909 according to Cronbach's alpha.

Ethical considerations

The present research received approval from the Human Research Ethics Committee of a de-identified university (Approval No 2476/GCN-HĐĐĐ). Each university in which the students studied granted permission for the research to be conducted. During the study, all the students were informed of the purpose, process, and potential inconvenience of participating. The participants' decisions were respected by the research team, and the information was kept confidential. There was no need for a physical assessment or intervention in this study. Additionally, lecturers were involved in data collection; therefore, the consent form with the study information sheet clearly explained that personal information and university name would not be collected by the survey.

Data analysis

Frequency distribution, means, and standard deviations were used to describe the characteristics of the participants. The present study utilized multivariate logistic and linear regression analyses in order to identify the factors that are associated with the coping strategies employed by nursing students. Statistical analyses were conducted using version 26 of IBM SPSS® statistical software, with a statistical significance level of $p < 0.05$.

RESULTS

Participant characteristics

The study garnered participation from a cohort of 471 students wherein the average age of participants was 21.2 years. A considerable majority of the cohort comprised of female students, accounting for 90.7%. The majority of the participants (98.5%) reported being vaccinated against Covid-19. Of the participating students, 7.0% reported having contracted Covid-19 while 26.3% had a family member. Notably, half of the participants were involved in Covid-19 epidemic prevention and control measures for the first time. Table 1 illustrates that 86.8% of the students had the support of their families in participating in volunteer activities.

TABLE 1 Details of the participants (n= 471)

Variables	Number (n)	Percentage (%)
Age:		
Mean ± SD: 21.18 ± 0.95		
Gender:		
Male	44	9.3
Female	427	90.7
Vaccinated:		
Yes	464	98.5
No	7	1.5
Infected with Covid-19:		
Yes		
No	33	7.0
	438	93.0
A relative or close friend of mine has been infected with Covid-19:		
Yes	124	26.3
No	347	73.7
Voluntary service times:		
1 time	251	53.3
More than 2 times	220	46.7
Support from family:		
Yes	409	86.8
No	62	13.2

SD denotes standard deviation.

TABLE 2 Students' psychological distress and coping strategies measured by mean and standard deviation, range, and level

Variable	Mean	S.D.
Stress-related psychological problems	22.60	3.52
An effective coping strategy:	75.15	10.78
The problem approach to coping	25.18	6.11
The emotional approach to coping	35.08	8.92
The avoidant approach to coping	14.97	12.14

Student participation in epidemic prevention and control resulted in an average psychological distress score of 22.6 ± 3.51 . According to these results, most students were at high risk of psychological distress. Among nursing students, 25.12 % used problem-focused coping, 35.07 % used emotional coping, and 14.95 % used avoidant coping. Stress-related changes, the regulation of emotions, and disengagement are indicators of students' efforts to cope with stressful situations.

TABLE 3 Nursing students participating in epidemic prevention and control: a study of factors related to coping strategies

Variable	n	%	t/F	p
Problem focussed coping				
Age			1.37/1.71	>0.05
Sex				
Male	44	9.3	0.97/0.83	<0.05
Female	427	90.7		
Vaccination				
Had vaccinated	464	98.5	0.42/0.11	<0.01
Not vaccinated	7	1.5		
Infected with Covid-19				
Yes	33	7.0	-1.53/4.21	>0.05
No	438	93.0		
Relative with Covid-19				
Yes	124	26.3	-1.92/3.75	>0.05
No	347	73.7		
Times of participating in Covid-19 prevention				
1 time	251	53.3	1.78/1.17	>0.05
2 times and more	220	46.7		

Variable	n	%	t/F	p
Support from family				
Yes	409	86.8	-0.18/0.12	<0.05
No	62	13.2		
Emotional focussed coping				
Age			1.76/1.83	>0.05
Sex			0.99/0.53	>0.05
Male	44	9.3		
Female	427	90.7		
Vaccination			0.43/0.12	>0.05
Had vaccinated	464	98.5		
Not vaccinated	7	1.5		
Infected with Covid-19			-1.97/2.54	<0.05
Yes	33	7.0		
No	438	93.0		
Relative with Covid-19			-1.92/2.77	>0.05
Yes	124	26.3		
No	347	73.7		
Times of participating in Covid-19 prevention				
1 time	251	53.3	1.09/1.78	>0.05
2 times and more	220	46.7		
Support from family				
Yes	409	86.8	-.02/0.17	<0.05
No	62	13.2		
Avoidant coping				

Variable	n	%	t/F	p
Age			1.76/1.89	>0.05
Sex			0.52/0.73	>0.05
Male	44	9.3		
Female	427	90.7		
Vaccination			0.18/0.16	>0.05
Had vaccinated	464	98.5		
Not vaccinated	7	1.5		
Infected with Covid-19			-1.98/2.45	>0.05
Yes	33	7.0		
No	438	93.0		
Relative with Covid-19			-1.97/2.39	>0.05
Yes	124	26.3		
No	347	73.7		
Times of participating in Covid-19 prevention				
1 time	251	53.3	1.90/1.86	>0.05
2 times and more	220	46.7		
Support from family			-.017/0.12	>0.05
Yes	409	86.8		
No	62	13.2		

The results of the multivariate linear regression analysis indicate a significant relationship between sex, vaccination, and support from family, and the utilization of problem-focused coping strategies. In addition, students who engaged in epidemic prevention and control activities reported experiencing Covid-19 infection, receiving support from their families, and implementing emotional coping strategies. Further details are presented in Table 3.

According to the nursing students, supportive methods, such as encouragement from family, relatives, and colleagues, were the most effective among all the supportive methods used in this study. Table 4

displays the timely provision of personal protective equipment, adequate knowledge and skills imparted to participants for effective participation in epidemic prevention and control measures, as well as well-defined workflows and guidelines necessary for proper implementation.

TABLE 4. Strategies for effecient support

Items	Mean	Rank
Support from family, relatives, and co-workers	2.7	1
Providing personal protective equipment in a timely manner with high quality and adequate quantity	2.6	2
Capable of preventing and controlling epidemics fully equipped with knowledge and skills	2.6	3
Make sure instructions and workflows are clear	2.5	4
Work with professional support	2.5	5
Family support policies exist	2.4	6
Providing enough time for rest and rejuvenation	2.3	7
Take part in epidemic prevention and control and get financial and social support	2.3	8
Honored and rewarded	2.2	9
Maintain food safety and hygiene while providing nutritious meals	2.0	10
Support services for psychological issues	1.8	11

DISCUSSION

Adapting to Covid-19 prevention and control activities using coping style is referred to as a solution. They tried to overcome life challenges, psychological distress to achieve adaptation in new conditions with support of friends and family. According to Table 3, nursing students participated in COVID-19 prevention programme had an average score of 75.14 ± 10.75 for coping style. The results of univariate analysis to find out the factors related to students' coping style revealed that factors of sex, vaccination and support from family had a statistically significant relationship with problem focussed coping strategies ($p < 0.01$); experiencing infected with Covid-19 and support from family had a statistically significant relationship with emotional focussed coping strategies ($p < 0.05$). It can be said that nursing students in Vietnam had a variety of coping styles while taking part in the COVID-19 prevention programme. Further, the coping strategies may be changed because of their situations. The results of this study also have similarities with other studies. The study conducted by Majedeh Nabavian et al. in 2021 aimed to explore the coping strategies adopted by nursing students while caring for patients with Covid-19. The results revealed that nursing students were able to reduce their distress levels through various coping mechanisms. Seeking support from family, seeking spiritual refuge,

listening to music, and reading books that improved their professional skills were among the coping strategies identified [24].

Researchers Claudia Casafont and colleagues in a study exploring phenology found nursing students adjusted themselves to safe adaptations over time, such as adhering to precautions or isolating themselves [25]. In addition to recognizing the possibility of adverse psychological effects, pupils of nursing acknowledge the potential to acquire knowledge from clinical encounters, while also enhancing their ability to function effectively as a team through progressive learning. The results indicated how nursing students deal with psychological distress such as psychological support from family and friends, people they can talk to and share their feelings through video calls, they also played sports, practiced yoga and did other activities, which helped them deal with psychological distress [26]. As part of the Covid-19 prevention and control activities in Spain, Martin-Delgado L et al (2020) conducted a qualitative study in order to describe the abilities of final-year nursing students participating in these activities. They experienced the lack of personal protective equipment for inventing personal hedges to protect themselves "Like everyone else, we sought to protect ourselves as we began to be creative. Our solution was to make protective gowns out of trash bags" [27].

Judith Roca et al. (2021) indicated that in the early stages, students experienced psychological distress while participating in a new working environment, the number of infected cases, the workload and the risk of infection was high [28]. However, nursing students presented their knowledge and practice on adapting themselves to specific situations at work. They seek support from classmates, psychological support in daily life, exploring information, caring for patients with Covid-19, planning for work activities and reasonable rest time. Especially, students had full skills on recreational activities to reduce distress such as exercise, listening to music, reading books, and more laughing [28].

Long Huang and colleagues (2020) in a study on emotional responses and coping strategies in nurses and nursing students during the Covid-19 outbreak reported that nurses used problem-focused coping methods more than nursing students ($t(802) = 4.99, p < 0.0001$). Women were significantly more focused on problem-solving than men ($t(317) = -2.30, p = 0.022$). Men used more emotionally focused coping strategies than women ($t(264.75) = 4.47, p < 0.0001$) [29].

As a component of the investigation, the nursing staff was requested to delineate their methodologies for self-aid and elucidate their viewpoints regarding efficacious supportive measures in light of the COVID-19 pandemic. Most of the proposed support measures were deemed effective based on the evaluation results. According to the results, "motivation from family, relatives, and colleagues" was the most important support measure. Similar findings have been reported in

Qatar, China, and the United States [30-32]. A person's spouse, loved ones, friends, coworkers, and community may be the most effective sources of social support when they are experiencing stressful times [33]. A significant reduction in distress reactions may be possible for students receiving social support. Ali and colleagues have recommended that students should talk to loved ones through video during Covid-19 [32]. As a result, nursing students during the Covid-19 outbreak must be able to access social support in a timely manner.

In comparison to their peers, nursing students involved in COVID-19 epidemic prevention and control programme displayed a heightened level of concern regarding the potential for transmission and the efficacy of protective measures. This is an understandable result when students participate in the prevention and control activities at field hospitals or areas heavily affected by the Covid-19 epidemic. These areas had to come into contact with a large number of Covid-19 patients. It further indicates that students involving in Covid-19 prevention and control programme had much higher frequency of direct contact with infected cases. However, these factors contribute significantly to the increase in distress, which suggests that protective measures in these places still need to be better controlled. Nursing students should have an appropriate work schedule to participate in the prevention and control of the Covid-19 epidemic, according to these findings.

The study has some limitations, such as the inadequate sample size of data collected from certain universities which do not reflect the characteristics of the entire population of nursing students enrolled in the COVID-19 control initiative in Vietnam. The method of data collection through the online form is also a limitation of the study. In addition, a cross-sectional design may not establish causal inference. Research is needed to determine how a long-term outbreak can affect psychological distress and coping strategies, as well as the urgent need for multi-level intervention groups to address the psychological stress caused by Covid-19 in nursing students.

CONCLUSION

The results show that the stress of nursing students during the fight against the Covid-19 epidemic is very common; however, students demonstrate positive coping strategies. Nursing students used a variety of stress coping strategies, with a focus on positive strategies related to problem-focused and emotion-focused coping. Nursing students volunteering to help prevent and control the Covid-19 epidemic should be supported with social support interventions, adequate personal protection, and improved knowledge and skills.

Bibliography

1. World Health Organization (WHO). (2021). WHO Coronavirus (COVID-19) Dashboard. Available at <https://covid19.who.int/>, accessed day 07/11/2021.
2. Gordon, M., Patricio, M., Horne, L., Muston, A., Alston, S. R., Pammi, M., Thammasitboon, S., Park, S., Pawlikowska, T., Rees, E. L., Doyle, A. J., & Daniel, M. (2020). Developments in medical education in response to the Covid-19 pandemic: A rapid BEME systematic review: BEME Guide No. 63. *Medical Teacher*, 42(11), 1202–1215. <https://doi.org/10.1080/0142159X.2020.1807484>
3. Docking P. (2003). SARS and the effect on nurse education in Singapore. *Contemporary Nurse*, 15(1-2), 5–8. <https://doi.org/10.5172/conu.15.1-2.5>
4. Lazarus, G., Findyartini, A., Putera, A. M., Gamalliel, N., Nugraha, D., Adli, I., Phowira, J., Azzahra, L., Ariffandi, B., & Widyahening, I. S. (2021). Willingness to volunteer and readiness to practice of undergraduate medical students during the Covid-19 pandemic: a cross-sectional survey in Indonesia. *BMC Medical Education*, 21(1), 138. <https://doi.org/10.1186/s12909-021-02576-0>
5. Tran, Q. A., Nguyen, H., Bui, T. V., Tran, N. T., Nguyen, N. T., Nguyen, T. T., Nguyen, H. T., & Nguyen, S. H. (2021). Factors Associated with the Intention to Participate in Coronavirus Disease 2019 Frontline Prevention Activities Among Nursing Students in Vietnam: An Application of the Theory of Planned Behavior. *Frontiers in Public Health*, 9, 699079. <https://doi.org/10.3389/fpubh.2021.699079>
6. Keener, T. A., Hall, K., Wang, K., Hulsey, T., & Piamjariyakul, U. (2021). Quality of Life, Resilience, and Related Factors of Nursing Students During the Covid-19 Pandemic. *Nurse Educator*, 46(3), 143–148. <https://doi.org/10.1097/NNE.0000000000000969>
7. Kim Y. (2018). Nurses' experiences of care for patients with Middle East respiratory syndrome-coronavirus in South Korea. *American Journal of Infection Control*, 46(7), 781–787. <https://doi.org/10.1016/j.ajic.2018.01.012>
8. Sun, N., Wei, L., Shi, S., Jiao, D., Song, R., Ma, L., Wang, H., Wang, C., Wang, Z., You, Y., Liu, S., & Wang, H. (2020). A qualitative study on the psychological experience of caregivers of Covid-19 patients. *American Journal of Infection Control*, 48(6), 592–598. <https://doi.org/10.1016/j.ajic.2020.03.018>
9. Maunder R, Hunter J, Vincent L, Bennett J, Peladeau N, Leszcz M, et al. The immediate psychological and occupational impact of the 2003 SARS outbreak in a teaching hospital. *CMAJ*. (2003) 168:1245–51
10. Salim S. Oxidative stress and psychological disorders. *Curr Neuropharmacol*. (2014) 12:140–7. [10.2174/1570159X11666131120230309](https://doi.org/10.2174/1570159X11666131120230309)
11. Ulenaers, D., Grosemans, J., Schrooten, W., & Bergs, J. (2021). Clinical placement experience of nursing students during the Covid-19 pandemic: A cross-sectional study. *Nurse Education Today*, 99, 104746. <https://doi.org/10.1016/j.nedt.2021.104746>
12. Folkman S, Lazarus R (1980). An analysis of coping in a middle-aged community sample. *Journal of Health and Social Behavior*, 21: 219–239. [PubMed] [Google Scholar]

13. Gloria CT, Steinhardt MA. Relationships Among Positive Emotions, Coping, Resilience and Mental Health. *Stress Health*. 2016 Apr;32(2):145-56. doi: 10.1002/smi.2589. Epub 2014 Jun 24. PMID: 24962138.
14. Nie A, Su X, Zhang S, Guan W, Li J. Psychological impact of COVID-19 outbreak on frontline nurses: A cross-sectional survey study. *J Clin Nurs*. 2020 Nov;29(21-22):4217-4226. doi: 10.1111/jocn.15454. Epub 2020 Aug 25. PMID: 32786150; PMCID: PMC7436701.
15. Folkman S, Lazarus R, Pimley S, et al. (1987). Agedifferences in stress and coping processes. *Psychology and Aging*, 2: 171–184. 10.1037//0882-7974.2.2.171 [PubMed] [CrossRef] [Google Scholar] [Ref list]
16. Maunder R, Hunter J, Vincent L, Bennett J, Peladeau N, Leszcz M, et al. The immediate psychological and occupational impact of the 2003 SARS outbreak in a teaching hospital. *CMAJ*. (2003) 168:1245–51
17. Brouwer, K. R., Walmsley, L. A., Parrish, E. M., McCubbin, A. K., Welsh, J. D., Braido, C., & Okoli, C. (2021). Examining the associations between self-care practices and psychological distress among nursing students during the Covid-19 pandemic. *Nurse Education Today*, 100, 104864. <https://doi.org/10.1016/j.nedt.2021.104864>
18. Gao, J., Wang, F., Guo, S., & Hu, F. (2021). Mental Health of Nursing Students amid Coronavirus Disease 2019 Pandemic. *Frontiers in Psychology*, 12, 699558. <https://doi.org/10.3389/fpsyg.2021.699558>
19. Harrison, S., Henderson, J., Alderdice, F., & Quigley, M. A. (2019). Methods to increase response rates to a population-based maternity survey: a comparison of two pilot studies. *BMC medical research methodology*, 19(1), 65. <https://doi.org/10.1186/s12874-019-0702-3>
20. Carver, C. S. (1997). You want to measure coping but your protocol's too long: consider the brief COPE. *International journal of behavioral medicine*, 4(1), 92–100. https://doi.org/10.1207/s15327558ijbm0401_6
21. Matsumoto S, Yamaoka K, Nguyen HDT, Nguyen DT, Nagai M, Tanuma J, Mizushima D, Nguyen KV, Pham TN, Oka S. Validation of the Brief Coping Orientation to Problem Experienced (Brief COPE) inventory in people living with HIV/AIDS in Vietnam. *Glob Health Med*. 2020 Dec 31;2(6):374-383. doi: 10.35772/ghm.2020.01064. PMID: 33409417; PMCID: PMC7780287.
22. Kang, Y. K., Guo, W. J., Xu, H., Chen, Y. H., Li, X. J., Tan, Z. P., ... & Li, T. (2015). The 6-item Kessler psychological distress scale to survey serious mental illness among Chinese undergraduates: psychometric properties and prevalence estimate. *Comprehensive Psychiatry*. (2015) 63:105–12. DOI: 10.1016/j.comppsy.2015.08.011
23. Hoang, M. T., Do, K. N., Pham, H. Q., Nguyen, C. T., Ha, G. H., Vu, G. T., Tran, B. X., Latkin, C., Ho, R., & Ho, C. S. (2020). Psychological distress among mountainous farmers in Vietnam: a cross-sectional study of prevalence and associated factors. *BMJ open*, 10(8), e038490. <https://doi.org/10.1136/bmjopen-2020-038490>
24. Nabavian, M., Rahmani, N., & Alipour, H. (2021). Experiences of nursing students in the care for patients diagnosed with Covid-19: A Qualitative Study. *Journal of Patient Experience*, 8, 23743735211039925. <https://doi.org/10.1177/23743735211039925>
25. Casafont, Claudia et al. "Experiences of nursing students as healthcare aid during the COVID-19 pandemic in Spain: A pemonenological research

- study.” *Nurse education today* vol. 97 (2021): 104711. doi:10.1016/j.nedt.2020.104711
26. Baluwa, M. A., Konyani, A., Chipeta, M. C., Munthali, G., Mhango, L., Chimbe, E., Lungu, F., & Mpsa, F. (2021). Coping with Fears of Covid-19 Pandemic Among Nursing Students During Clinical Practice: Malawi's Perspective. *Advances in medical education and practice*, 12, 1389–1396. <https://doi.org/10.2147/AMEP.S337783>
 27. Martin-Delgado L, Goni-Fuste B, Alfonso-Arias C, De Juan M, Wennberg L, Rodríguez E, Fuster P, Monforte-Royo C, Martin-Ferreres ML. Nursing students on the frontline: Impact and personal and professional gains of joining the health care workforce during the Covid-19 pandemic in Spain. *Journal of Professional Nursing*. 2021 May-Jun;37(3):588-597. DOI: 10.1016/j.profnurs.2021.02.008. Epub 2021 February 23. PMID: 34016318; PMCID: PMC7899922.
 28. Roca, Judith et al. “Experiences, emotional responses, and coping skills of nursing students as auxiliary health workers during the peak COVID-19 pandemic: A qualitative study.” *International journal of mental health nursing* vol. 30,5 (2021): 1080-1092. doi:10.1111/inm.12858
 29. Huang, L., Lei, W., Xu, F., Liu, H., & Yu, L. (2020). Emotional responses and coping strategies in nurses and nursing students during Covid-19 outbreak: A comparative study. *PloS one*, 15(8), e0237303. <https://doi.org/10.1371/journal.pone.0237303>
 30. Villar RC, Nashwan AJ, Mathew RG, Mohamed AS, Munirathinam S, Abujaber AA, et al. The lived experiences of frontline nurses during the coronavirus disease 2019 (COVID-19) pandemic in Qatar: A qualitative study. *Nurs Open* 2021;8:3516-3526.
 31. Hu S, Dai Q, Wang T, Zhang Q, Li C, He H. Relationship between work stressors and mental health in frontline nurses exposed to COVID-19: a structural equation model analysis. *Ann Med Psychol (Paris)* 2022;180:412-418.
 32. Ali H, Cole A, Ahmed A, Hamasha S, Panos G. Major stressors and coping strategies of frontline nursing staff during the outbreak of coronavirus disease 2020 (COVID-19) in Alabama. *J Multidiscip Healthc* 2020;13:2057-2068.
 33. Sehularo LA, Molato BJ, Mokgaola IO, Gause G. Coping strategies used by nurses during the COVID-19 pandemic: a narrative literature review. *Health SA* 2021;26:1652.