

ORIGINAL ARTICLE

Emotional and Behavioral Response and Coping Strategies of Nursing Students During Covid-19 Epidemic: A Longitudinal Study

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ABSTRACT

Introduction: Little is known about changes in levels of psychological and behavior impact and coping strategies during the COVID-19 pandemic among nursing students. This study investigated nursing students' emotional and behavioral responses and coping strategies against COVID-19. **Methods:** A university online survey was used to collect demographic information, a history of contact with people who had the COVID-19 for 14 days, emotional and behavioural response scales, and to modify the Brief COPE to assess coping strategies. One-way ANOVAs were used to compare the mean emotional and behavioral responses and coping strategy scores. **Results:** A total of 396 valid and complete questionnaires were retrieved, with a response rate of 96.59%. The mean ages ranged from 19 to 45 years old ($M = 24.14$, $SD \pm 3.68$), and the majority were female ($n = 245$, 61.9%). Nursing students have lower scores of problem-focused copings ($M = 1.42$, $SD \pm 0.30$), emotional-focused coping ($M = 2.00$, $SD \pm 0.26$), but higher scores of avoidant coping ($M = 2.92$, $SD \pm 0.51$). The anxiety and fear were significantly different in relation to age, smoking, and drinking warm water habits, and there was no family history of chronic illness. Problem-focused coping proved to be the influencing factor ($R^2 = 0.381$) for students' anxiety ($\beta = 0.045$, $p = 0.004$), fear ($\beta = 0.309$, $p = 0.000$), and anger ($\beta = -0.273$, $p = 0.000$). **Conclusion:** These results could serve as evidence that hospitals or nursing homes could provide psychological support to students by providing timely psychological assistance, training in coping strategies, and taking a variety of interventions to create an optimistic environment and guarantee personal safety for students.

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INTRODUCTION

The latest occurrences of infectious diseases significantly affect physical, psychological, and social wellbeing (1). The coronavirus (COVID-19) had a large-scale spread and was identified by the WHO as an epidemic. In 198 nations and territories, COVID-19 has impacted more than 492,000 people; more than 22,000 have died from the illness, and as of this writing, over 119,000 have recovered (2). It should be noted that the psychological effects of such an outbreak do not spare the general community, not even nursing students who are not sick with the disease (3-5).

The emotions associated with a pandemic, such as dread and wrath, must be considered to be involved and examined for psychological and mental effects. The biological processes involved in preparing for a reaction to possibly dangerous situations are called the biological processes of fear, which is an adaptable animal defensive mechanism that is essential for life (6). But when it becomes detrimental and out of proportion, it can play a significant role in the emergence of a number of mental diseases (7, 8). Fear during a pandemic heightens anxiety and stress levels in healthy people and exacerbates the symptoms of people who already have psychiatric problems. Additional problems during such outbreaks include disruptions to daily routines, loss and bereavement, and stigma (8).

In pandemics, more people experience problems with their mental health than those who are

physically ill (6). Because of the epidemic's growing threat, there was an increase in anxiety and despair around the world as a result of cancelled vacation plans, social exclusion, media exposure overload, and panic purchases of essentials. (9). Compared to front-line nurses, the general public's vicarious traumatization scores were much higher (10).

So, people in charge of public health and government need immediate direction and concrete advice on how to make psychology and public health programmes that save people's mental health (11). Cross-sectional research on COVID-19's mental health was recently conducted (12), highlighting health professionals (7, 13) or a certain age range (14). Also, there is a lack of thorough analysis to determine whether elements are protective or harmful for psychological problems (15). There is currently no evidence on the elements that might influence the psychological impact of adoption, including behavioral evolution and emotional reaction, coping mechanisms against the COVID-19 outbreak, or both. This research will focus on the identity risk and protective variables among nursing students in West Java, as well as the temporal emotional and behavioral impact and coping mechanisms when the COVID-19 epidemic first began and peaked.

MATERIALS AND METHODS

Samples

Data were gathered through a networking platform; an online questionnaire was used to measure the healthy behaviour of nursing students. Based on a power analysis, the number of participants was determined. 365 respondents were involved. 22 additional subjects were added in order to prevent a 30% withdrawal rate. In this study, the researcher used purposive sampling to obtain the sample, where a researcher selects a sample based on the needs of the study. Eligibility criteria were Indonesian nationality, student nurses pursuing a diploma or a bachelor's degree, can access the Internet, full-time students, aged 20 years or older and being open to participation.

Instruments

By defining the typical responses, to particular goods (some of which must be reversed responses for example) and providing clear instructions, we were able to assure the validity of the study. Additionally, analyses of questions completed in less than one minute or more than 60 minutes were eliminated. Characteristic respondents involved age, gender, educational attainment, present domicile (which measured participants' physical proximity to the COVID-19), the previous 14 days' worth of medical symptoms, awareness of and worries regarding the COVID-19, and encounters with patients who have

the COVID-19. A formal informed consent form for this study was given to the respondents. At any time, a respondent could stop taking the questionnaire without giving a reason.

The number of 14 questions in the first segment of the questionnaire assessed the nursing students' feelings amid the COVID-19 outbreak. On a scale of one to four, each question offered four options (0=not at all; 1=slightly; 2=moderately; 3=very much). The second part looked at 19 potential stressors that nursing students might experience. (0=not at all; 1=slightly; 2=moderately; 3=very much). The third segment contained 14 questions that asked about potential stress-reduction strategies (0=never; 1=sometimes; 2=often; 3=always). The fourth section, which was based on Carver's Brief COPE, evaluated the coping method used during the COVID-19 outbreak (1997). In order to reply to COVID-19, researchers probed competent participants to indicate how often they applied the technique outlined, from 1 (none) to 5 (always) on a scale of 5. More score ratings showed better coping abilities. In this study, the Cronbach's coefficients are 0.817 and 0.811, respectively. The fifth section's nine questions, each with four possible answers, from not important to most important (scores, 0–3), focused on what could boost nursing students' confidence in the event of future outbreaks.

Statistical Analysis

In order to compare the first and second results' mean scores from the questionnaire in order to examine the variations in emotional and behavioral reactions, as well as coping, researchers used an independent t-test. Variations among variables involving categories comparing the first and second were evaluated using the chi-squared test. SPSS Statistics version 21.0 was used for the statistical analysis.

Ethical Clearance

The researcher submitted approval to the Health Research Ethics Committee of Santo Borromeus High School of Health Sciences and obtained ethical approval on 19th January, 2021 with number 003/STIKes-SB/Etik/Has./1/2021.

RESULTS

General information

During the COVID-19 epidemic, 410 questionnaires were distributed to nursing students, of which 396 were valid and complete, yielding a response rate of 96.59%. Based on table I, The mean ages of the respondents range from 19 to 45 (mean 24.14, SD \pm 3.68). The majority of respondents were female (n= 245, 61.9%), lived in urban areas (n= 226, 57.1%), and lived with their parents and sister or brother (n=348, 87.9%). Totally, 382

Table I : Data of Demographic characteristics, personal habit, family history, emotional, behaviour responses, and coping strategies among nursing students (N=396)

Variable	N (%)	Mean \pm SD
Demographic Characteristics		
Age		24.14 \pm 3.68
Gender		
Male	151 (38.1%)	
Female	245 (61.9%)	
Body Height		161.14 \pm 7.19
Body Weight		60.76 \pm 13.05
Living area		
Urban	226 (57.1%)	
Rural	170 (42.9%)	
Type of Family		
live with parents and sister or brother	348 (87.9%)	
live without parents and sister or brother	48 (12.1%)	
Personal Habit		
Smoking		
Yes	14 (3.5%)	
No	382 (96.5%)	
Drink warm water		
Yes	263 (66.4%)	
No	133 (33.6 %)	
Family History		
Hypertension		
Yes	145 (36.6%)	
No	251 (63.4%)	
Diabetes Mellitus		
Yes	51 (12.9%)	
No	345 (87.1%)	
Heart Disease		
Yes	28 (7.1%)	
No	368 (92.9%)	
Lung Disease		
Yes	76 (19.2%)	
No	320 (80.8%)	
Diagnosed COVID-19		
Yes	109 (27.5%)	
No	287 (72.5%)	

(96.5%) nursing students were not smokers and had a drinking warm water habit (n =263, 66.4%). The majority of respondents did not have a family history of hypertension (n=251, 63.4%), Diabetes Mellitus (n=345, 87.1%), Heart diseases (n=368, 92.9%), or lung diseases (n=320, 80.8%). More than half of the respondents were not diagnosed with infectious COVID-19 (n=287, 72.5%).

Descriptive statistics of emotion responses

The results in Table II show the different mean emotional, and coping strategies by gender among nursing students. Independent t-test results revealed that emotional responses (anger, sadness, fear, and anxiety) were not significantly different between males and females ($p>0.005$). Participants who live in cities reported significantly more anger, sadness, and fear than those who live in rural areas ($p<0.005$). Nursing students who live with a parent and sister or brother experienced a higher level of anger, sadness, fear, and anxiety than nursing students who live with large family members ($p<0.005$). One-way ANOVAs revealed that anxiety and fear were significantly related to age, smoking and drinking warm water habits, and having no family history of chronic illness. Other findings included anger and sadness being significantly different in smoking and drinking warm water habits, as well as having no family history of chronic illness ($p>0.005$).

Descriptive statistics of coping strategies

Table III presents the different means of emotional, and coping strategies by living area among nursing students. The analysis found that nursing students have lower scores of problem-focused coping ($M= 1.42$, $SD\pm 0.30$), emotional-focused coping ($M=2.00$, $SD\pm 0.26$), but higher score of avoidant coping ($M= 2.92$, $SD\pm 0.51$). Results showed no significant difference between how much more males and females took to problem focused coping, emotional-focused coping, and avoidant coping ($p = 0.571$, $p=0.930$, $p= 0.526$, respectively). More nursing students who live in urban than rural areas took to emotional-focused coping, and avoidant coping ($p= 0.000$, $p= 0.000$, respectively), except problem focused coping ($p=0.279$). According to the results in table IV, more nursing students who live with parents and a sister or brother than those who live with big family members took to problem focused coping, emotion-focused coping, and avoidant coping ($p =0.008$, $p= 0.000$, $p= 0.000$, respectively).

One-way ANOVAs found that age, smoking and drinking warm water habits, and having no family history of chronic illness were significantly different with regard to COVID-19. Results found that smoking, drinking warm water, and having no

Table II : Different Mean of emotional, and coping strategies by gender among nursing students

Variable	Male (n=151)	Female (n=245)	p-value
Emotional response			
Anger	3.11 (1.37)	3.11(1.38)	.953
Sadness	3.29(1.28)	3.42(1.23)	.320
Fear	3.22(1.24)	3.33(1.20)	.392
Anxiety	2.75(1.43)	2.78(1.47)	.836
Coping strategies			
Problem-focused copings	1.41 (0.29)	1.42 (0.29)	.571
Emotional-focused coping	1.99 (0.25)	1.98 (0.27)	.930
Avoidant coping	2.94 (0.50)	2.91 (0.52)	.526

Table III : Different Mean of emotional, and coping strategies by living area among nursing students

Variable	Urban (n=226)	Rural (n=170)	p-value
Emotional response			
Anger	2.77(1.31)	3.57(1.32)	.000
Sadness	3.09(1.14)	3.74(1.30)	.000
Fear	3.00(1.06)	3.66(1.32)	.000
Anxiety	2.48(1.27)	3.15(1.58)	.000
Coping strategies			
Problem-focused copings	1.43(0.33)	1.40(0.23)	.279
Emotional-focused coping	2.05(0.20)	1.90(0.30)	.000
Avoidant coping	3.07(0.44)	2.73(0.54)	.000

Table IV : Different Mean of emotional, and coping strategies by Type of Family among nursing students

Variable	live with parents and sister or brother (n=348)	live without parents and sister or brother (n=48)	p-value
Emotional response			
Anger	3.24(1.25)	2.17(1.84)	.000
Sadness	3.54(1.05)	2.17(1.84)	.000
Fear	3.44(1.02)	2.17(1.84)	.000
Anxiety	2.89(1.42)	1.88(1.38)	.000
Coping strategies			
Problem-focused copings	1.43(0.28)	1.31(0.32)	.008
Emotional-focused coping	2.00(0.27)	1.82(0.11)	.000
Avoidant coping	2.87(0.50)	3.27(0.48)	.000

Table V : Correlation between emotional responses and coping strategies among nursing students

Emotional response		Anger	Sadness	Fear	Anxiety	Problem-focused copings	Emotional-focused coping	Avoidant coping
Anger	Pearson Correlation	1	.894**	.887**	-.409**	.103*	-.278**	-.495**
	Sig. (2-tailed)		.000	.000	.000	.041	.000	.000
	N	396	396	396	396	396	396	396
Sadness	Pearson Correlation	.894**	1	.975**	.710**	.342**	-.101*	-.479
	Sig. (2-tailed)	.000		.000	.000	.000	.046	.000
	N	396	396	396	396	396	396	396
Fear	Pearson Correlation	.887**	.975**	1	.634**	.365**	-.110*	-.461**
	Sig. (2-tailed)	.000	.000		.000	.000	.029	.000
	N	396	396	396	396	396	396	396
Anxiety	Pearson Correlation	.800**	.710**	.634**	1	.064	-.314**	-.580**
	Sig. (2-tailed)	.000	.000	.000		.203	.000	.000
	N	396	396	396	396	396	396	396
Coping strategies								
Problem-focused copings	Pearson Correlation	.103**	.342**	.365**	.064	1	.597**	-.146**
	Sig. (2-tailed)	.041	.000	.000	.203		.000	.004
	N	396	396	396	396	396	396	396
Emotional-focused coping	Pearson Correlation	-.278**	-.101**	-.110**	-.314**	.597**	1	.454**
	Sig. (2-tailed)	.000	.046	.029	.000	.000		.000
	N	396	396	396	396	396	396	396
Avoidant coping	Pearson Correlation	-.495**	-.479**	-.461**	-.580**	-.146**	.454**	1
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	
	N	396	396	396	396	396	396	396

family history of chronic illness were significantly different when using emotional coping strategies for COVID-19.

Correlation between emotional responses and coping strategies

After adjusting for age, smoking, and drinking warm water habits, and having no family history of chronic illness, Pearson correlation analyzed coping strategies and emotional responses. According to the findings,

avoidant and emotional coping were significantly correlated to anxiety ($r = -0.314^{**}$, $r = -0.580^{**}$, respectively). The variables of anger, sadness, fear, and anxiety were significant in relation to each other as coping strategies (Table V).

Regression analysis of emotional responses and coping strategies

To determine which coping strategies impacted the response of emotion, multiple regression

Table VI : Regression analysis of emotional responses and coping strategies among nursing

Problem-Focused Coping	B	Std. Error	R ²	p-value
Anger	-.273	.024	.381	.000
Sadness	.018	.049		.716
Fear	.309	.050		.000
Anxiety	.045	.016		.004
Emotion-focused coping	B	Std. Error	R ²	p-value
Anger	-.122	.025	.212	.000
Sadness	.226	.050		.000
Fear	-.084	.051		.103
Anxiety	-.058	.016		.000
Avoidant coping	B	Std. Error	R ²	p-value
Anger	.097	.044	.364	.027
Sadness	.179	.087		.041
Fear	-.296	.091		.001
Anxiety	-.230	.028		.000

was used. According to the findings in table VI, problem-focused coping was the determining factor ($R^2 = 0.381$) anxiety ($\beta = 0.045$, $p = 0.004$), fear ($\beta = 0.309$, $p = 0.000$), and anger ($\beta = -0.273$, $p = 0.000$) ($R^2 = 0.381$), according to the model at 38.1%. Emotion-focused coping ($R^2 = 0.212$) was an influenced factor for nursing students' anxiety ($\beta = -0.058$, $p = 0.000$), sadness ($\beta = 0.226$, $p = 0.000$), and anger ($\beta = -0.122$, $p = 0.000$), according to the model at 21.2%. Avoidant coping was a significantly influenced factor ($R^2 = 0.364$) for nursing students' anxiety ($\beta = -0.230$, $p = 0.000$), fear ($\beta = -0.296$, $p = 0.001$), sadness ($\beta = 0.179$, $p = 0.041$), and anger ($\beta = 0.097$, $p = 0.027$), as indicated by the model at 36.4%.

DISCUSSION

Significant stress has been caused by COVID-19 in both the cases of individuals and social groups. Various people go through various stages of a mental crisis; however, those who are at the centre of the issue face additional difficulties (16). The study discovered that nursing students as medical professionals demonstrate more strength, anger, sadness, fear, and anxiety. When dealing with the COVID-19 outbreak, participants experience intense anxiety in their minds and worry about their future careers (17). A variety of other emotions, including joy, uncertainty, and helplessness, can surface in

their expertise (10). Apprehensions about getting sick after having intimate contact with patients, being unaccustomed to new, specific work settings and practices, the feeling of pain brought on by extra security, seeing patients suffer and die, and being away from a relative for an extended period of time (14).

Nursing students' sadness is further exacerbated by their physical incapacity to be with their relatives due to fears about infections (18). Seeing a patient who is deteriorating also leaves them feeling defeated, resulting, especially for female patients, in emotions of guilt and blame. Women had a much greater score of feeling lonely, anxious, and sad than men, according to the results (19). This is thought to be connected to gender characteristics. Women are more concerned with their internal experiences and sense of self, have more delicate and sensitive emotions, and are more prone to despair, anxiety, and feeling lonely (10). The result's findings were comparable to ours. In the SARS pandemic, (13) it was shown that more women than men sought therapy for emotional problems. His example demonstrates even further that mental responses to an emergency relate to public health.

In this study, it was also discovered that urban respondents showed higher levels of fear and anxiety than rural ones did. But compared to urban

respondents, rural participants felt more depressed. This may be because cities have a lot of people gathered in them and are densely populated. Respondents from urban regions exhibit the COVID-19 disease more clearly than those from rural, areas which increases their worries about contracting the infection and increases their anxiety. Contrarily, rural participants feel more sympathy for those who might be ill and pay more attention to them. Additionally, we discovered that individual emotions were not greatly affected by the intensity of the epidemic in cities, which may mean that people are not overly worried about the pandemic's severity in their city. This issue might also be brought up by the little variations in the pandemic's severity among the study's chosen cities.

Additionally, these results indicated that nursing students who live with their immediate relatives experience significantly less emotional distress than those who reside with extended family. Additionally, it was discovered that nursing students who traveled to red zones and resided in either a village or a community that was impacted by COVID-19 displayed greater anxiety and rage than those who lived in invulnerable areas. (20). There is a greater chance of contracting an infection in a neighborhood where there are already diagnosed patients. Patients in COVID-19 are spread across the world, and participants' physical separation from one another reflects their psychological separation (9). These results are supported by our findings and those of the studies conducted during the SARS pandemic (14). When under pressure brought on by public health situations, university students frequently adopt immature or harmful coping mechanisms rather than constructive problem-solving techniques (13). According to these findings, both men and women were sensitive to feelings and developed coping mechanisms to deal with them. Additionally, this research discovered that nursing students who visited damaged areas had higher rates of using avoidant coping mechanisms, problem-focus, and emotion-focus than nursing students who visited unaffected areas. This is due to the respondents' lack of emotional reactivity to the pandemic and their lack of attention to COVID-19 because they are in an unaffected area. The emotion-focused coping of participants was low when one of the locals was found to be positive because of the psychological hurricane eye effect (13), which implies that the impact is lessened the closer you are to the event.

According to a later regression analysis, participants' problem-coping styles had an impact on their levels of anxiety and anger. This means that worry and anger will get worse as they take more steps to stop the outbreak. They are at 38.1%, nevertheless, because of the model's poor interpretation.

According to the findings, it is required to do a long-term study to determine whether using problematic coping mechanisms causes an increase in anxiety and rage. Anxiety, sorrow, and anger among nursing students were also shown to be predicted components, and the model's explanatory power was determined to be 21.2%. Additionally, this study discovered that the avoidant-coping strategies, which the model explained at 36.4%, have an impact on anger, sadness, fear, and anxiety, with anxiety and anger being less affected by these problem-coping techniques. This can be due to their low level of anxiety, which makes them resistant to the effects of coping mechanisms. The novel COVID-19 virus's highly contagious and deadly nature is better understood with increased knowledge, which increases anxiety.

CONCLUSION

Nursing students' anxiety, fear, despair, and coping mechanisms during the COVID-19 pandemic were influenced by characteristics like drinking warm water, smoking, age, smoking, habit, and not having any relatives with chronic illnesses. This study's results investigate the connection between coping techniques and emotional reactions in further depth. Following the COVID-19 epidemic, we advise nursing homes and hospitals to focus on the following activities: strengthening psychological support and enhancing training in mechanisms of coping, configuring a suitable device for medical protection, and creating interventions throughout a broad spectrum to prohibit COVID-19 spreading and control the spread of infectious diseases. It will foster a positive environment and ensure safety, enabling them to continue providing the highest standard of patient care in order to defeat this pandemic.

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