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# Coping strategy with coronavirus disease-2019 health anxiety in nursing students

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## Abstract:

**BACKGROUND:** The high prevalence of coronavirus disease-2019 (COVID-19) has a lot of stress on medical students. This study was conducted to investigating the adaptation strategy with COVID-19 health anxiety in nursing students

**MATERIALS AND METHODS:** This study was designed as a cross-sectional study. Participants of the study were 431 students of the Nursing and Midwifery Faculty of Shahid Beheshti University of Medical Sciences. Inclusion criteria were studying at the time of the outbreak of COVID-19 and willingness to participate in the study. Data collection tools included participated in the study. Data collection tools included a demographic questionnaire, Health Anxiety and Coping Inventory for Stressful Situations (Short Form). Reliability of tools was assessed and confirmed with Cronbach's alpha coefficient. Cronbach's alpha coefficient of health anxiety was 0.76 and Cronbach's alpha coefficient of Coping Inventory for Stressful Situations was 0.79. Data were collected between July 2020 and September 2020. Pearson's correlation coefficient was used to examine the relationship between the data. Data were analyzed with SPSS 26.

**RESULTS:** Findings indicated that most of the participants were female, single, 22–28 years old, and undergraduate students. The mean of COVID-19 health anxiety was  $5.59 \pm 17.04$ . Results showed that  $19.58 \pm 5.05$  of the participants used avoidance-focused adaptation strategies,  $25.12 \pm 3.88$  problem-focused adaptation strategies, and  $19.32 \pm 5.13$  emotion-focused adaptation strategies.

**CONCLUSION:** The COVID-19 health anxiety was higher in female, young, and married students. The problem-focused adaptation strategy should be further taught so that students can better coping with COVID-19 health anxiety.

## Keywords:

Anxiety, coronavirus disease-2019, education, nursing, student

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## Introduction

At the end of 2019, a new coronavirus called severe acute respiratory syndrome coronavirus-2 (SARS-COV-2) led to an epidemic of severe respiratory disease in Wuhan, China.<sup>[1]</sup> The World Health Organization (WHO) called the coronavirus disease-2019 (COVID-19) and it led to a global pandemic.<sup>[2]</sup> Various health crises have been caused by new viral infections such as HIV, H1N1, H5N1, SARS-COV1, MERS-COV, and Ebola over

the past 20 years. However, the COVID-19 pandemic revealed a lack of readiness to control and the rapid and sudden outbreak of the disease.<sup>[3]</sup> COVID-19, which spread worldwide in 2020, has affected everything in the world,<sup>[4]</sup> and thousands of people in different countries have been affected by it.<sup>[5]</sup>

Many efforts have been made to prevent the disease outbreak, but data from health systems on the effects of the disease on mental health should be given more attention<sup>[5]</sup> In different countries, a variety of strategies such as social distancing and home quarantine have been used to

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reduce the disease outbreak in society through human to human.<sup>[5,6]</sup> Schools and offices in different parts of the world have been closed,<sup>[5]</sup> and these closures have affected the lives of people all over the world.<sup>[6]</sup> In the meantime, students face many problems.<sup>[4]</sup> The experience of home quarantine and lockdown had a great psychological impact on academics and professional staff.<sup>[6]</sup>

The high prevalence of COVID-19 has caused great anxiety to medical staff due to the high risk of infection, isolation, caring for critically ill patients, and overwork. This crisis has led to mental health problems for them such as anxiety, fear, stress, insomnia, and depression.<sup>[7]</sup> Nursing students are no exception to this rule. Health anxiety is one of the psychological problems that may affect students and their families during the outbreak of COVID-19. Health anxiety is a disorder characterized by high fear and anxiety of having a serious disease.<sup>[8]</sup> Moreover, mental health is very important for students. Diseases can affect their attitudes, motivations, and focus on social interactions, and ultimately, their success.<sup>[9,10]</sup>

The COVID-19 pandemic has greatly affected the mental health of people in the community. Worry about the disease along with restrictions on social and physical activities due to quarantine<sup>[9]</sup> has drastically changed the lifestyle of people in the community.<sup>[11]</sup> According to Ellis, Dumas and Forbes, human beings face an unknown disease<sup>[12]</sup> that causes stress in society.<sup>[13]</sup> The strategies to cope with it are the closure of educational centers and social distancing.<sup>[12]</sup> The isolation of people without a fixed income is the fear of the disease that can lead to mental disorders.<sup>[12]</sup> COVID-19 has expanded mental problems throughout society due to the effects of social distancing and economic problems.<sup>[14]</sup> Psychological support and education about stress management strategies for nurses can help them manage their depression, anxiety, and stress.<sup>[15]</sup> The WHO emphasizes the need to prevent such problems.<sup>[14]</sup>

The increase in psychological stress caused by COVID-19 has been associated with the occurrence of misbehaviors to reduce the stress caused by the disease. Therefore, it is recommended that more studies be done to find better adaptive solutions.<sup>[16]</sup> There are three coping mechanisms for stress-related anxiety in individuals, including problem-focused coping or actively dealing with the issue to solve it, emotion-focused coping or focusing on emotional responses to the problem, and avoidance coping or escape from the problem, which manifests itself in the form of turning to the community and other people or engaging in a new activity.<sup>[17]</sup> In the model of coping styles proposed by Endler and Parker, emotion-focused and avoidance styles are considered as maladaptive styles and problem-focused styles as

an adaptive coping style to deal with the stresses of everyday life.<sup>[18]</sup>

Adaptive strategies adopted by individuals play an important role in emotional responses and the development of psychological problems because these strategies can lead to better adaptation and health behaviors in individuals.<sup>[11]</sup> Anxiety caused by COVID-19 has negative effects on adaptive strategies.<sup>[12]</sup> Due to the importance of assessing health anxiety in clinical health students, especially in the current special conditions, and also given the importance of using appropriate adaptation strategies in the control of health anxiety associated with COVID-19, this study was conducted to investigate strategies for coping with health anxiety associated with COVID-19 in students of the Faculty of Nursing and Midwifery, SBMU, in 2020.

## Materials and Methods

### Study design and setting

This study was a cross-sectional study. The statistical population included all students of the Nursing and Midwifery Faculty of Shahid Beheshti University of Medical Sciences. Data were collected from September to October 2020. Data collection tools included a demographic questionnaire, Health Anxiety Inventory,<sup>[19]</sup> and Coping Inventory for Stressful Situations (Short Form).<sup>[17]</sup> An electronic questionnaire was developed and its link was provided to the students through the cell phone after the ethical approval. In this questionnaire, after explaining the objectives of the study and obtaining the consent of the samples, they were asked to complete the questionnaires used in the study (demographic information questionnaire, Health Anxiety Inventory, and Coping Inventory for Stressful Situations (Short Form)). Pearson's correlation coefficient was used to examine the relationship between the data. Analyses were conducted using IBM SPSS Statistics, Version 20 (IBM Corp., Armonk, NY, USA)

### Study participants and sampling

The statistical population included all students of the Nursing and Midwifery Faculty of Shahid Beheshti University of Medical Sciences, who were studying and attending clinical education during the time of the outbreak of COVID-19. Inclusion criteria were studying at the time of the outbreak of COVID-19 and willingness to participate in the study. Nursing students of different levels participated in the study. The sampling method was the census. The online link of this inventory was sent via cell phone number to all students. Four hundred thirty-one students filled the questionnaires completely.

### Data collection tool and technique

The Health Anxiety Inventory, developed by Salkovski

et al.,<sup>[19]</sup> consists of 18 items. Each item has four subitems, each of which has a score between zero and 3. The total score of the inventory is from 0 to 54, with higher scores indicating a higher level of anxiety. The inventory has three main factors, general health concerns, disease, and perceived negative consequences. The items for general health concerns are items 1, 2, 3, 4, 7, 10, and 14; the items for becoming ill are items 5, 6, 8, 9, 11, and 12; and the items for perceived negative consequences are items 13, 15, 16, 17, and 18. Cronbach's alpha coefficient of the questionnaire was reported between 0.7 and 0.82 by its designers.<sup>[19]</sup> This questionnaire has also been translated and validated in Persian. Its face and content validity and reliability were also confirmed in this study by Cronbach's alpha of 0.76. Cronbach's alpha was 0.57 for general health concerns, 0.66 for becoming ill, and 0.64 for perceived negative consequences.

The Coping Inventory for Stressful Situations (Short Form), designed by Endler and Parker,<sup>[17]</sup> assesses three coping styles: problem focused, emotion focused, and avoidance focused. The dominant style of each person is determined according to his/her score in each of the three dimensions of coping styles. Items on this scale are scored on a 5-point Likert scale (from 1: not at all to 5: always). Items for avoidance-focused coping style include items 1, 4, 7, 9, 15, 18, and 21; items for problem-focused coping style include items 2, 6, 8, 11, 13, 16, and 19; and items for emotion-focused coping style include items 3, 5, 10, 12, 14, 17, and 20. The maximum score for each factor is 35 and the minimum is 7. Piri and Shararay<sup>[20]</sup> estimated Cronbach's alpha coefficient of 0.81 for problem-focused style, 0.85 for emotion-focused style, and 0.80 for avoidance style to examine the psychometric properties of the questionnaire with Iranian culture. Its face and content validity and reliability were also confirmed in this study by Cronbach's alpha of 0.79. Cronbach's alpha was 0.73 for problem-focused coping style, 0.81 for emotion-focused coping style, and 0.78 for avoidance coping style.

### Ethical consideration

This study was approved by Ethics Committee (IR.SBMU.RETECH.REC.1399.134). To observe the ethical considerations, the research goals and procedures were elucidated to the participants, they were assured of information anonymity and confidentiality, and informed written consent was obtained from each nurse. They participated in the study voluntarily and could leave the study at any stage.

## Results

In this study, 431 students were participated. Demographic findings indicated that the majority of participants were female, single, 22–28 years old, and undergraduate students. These findings are presented in Table 1.

The mean level of anxiety associated with COVID-19 in participants was  $5.59 \pm 17.04$  using the Health Anxiety Inventory. These findings are provided in Table 2 and participants' coping styles are shown in Table 3 using the Coping Inventory for Stressful Situations with problem-focused, emotion-focused, and avoiding coping styles.

Table 4 shows the relationship between the levels of anxiety associated with COVID-19 in the factors of general health concerns, becoming ill, and perceived negative consequences with problem-focused, emotion-focused, and avoidance-focused coping styles. According to Table 4, there is an inverse relationship between avoidance-focused adaptation strategy and general health concerns, and between problem-focused adaptation strategy and perceived

**Table 1: Demographic finding of participants**

Items	n (%)
Gender	
Male	168 (39.0)
Female	263 (61.0)
Age	
18-22	389 (90.3)
22-28	24 (5.6)
>28	18 (4.2)
Education	
Anesthesia	87 (20.2)
Operating room	86 (20.0)
Nursing	197 (45.7)
Midwifery	61 (14.2)
Education grade	
BS	382 (88.6)
MS	23 (5.3)
PhD	14 (3.2)
Miss data	12 (2.8)
Marriage	
Single	421 (97.7)
Married	8 (1.9)
Divorce	2 (0.5)
Living place	
Parents	359 (83.3)
Dormitory	68 (15.8)
Family	4 (0.9)
Transport	
Bus	100 (23.2)
Taxi	104 (24.1)
Metro	89 (20.6)
Individual	138 (32.0)

**Table 2: Findings of coronavirus disease-2019-related health anxiety inventory in participants**

Health anxiety	Mean±SD		
	General health concerns	Becoming ill	Perceived negative consequences
17.04±5.59	7.32±2.92	6.23±2.34	3.44±2.31

SD=Standard deviation

negative consequences. In addition, there is a direct relationship between problem-focused adaptation strategy and general health concerns and between problem-focused adaptation strategy and perceived negative consequences. Besides, there is a direct relationship between emotion-focused adaptation strategy and three factors: general health concerns, becoming ill, and perceived negative consequences.

This study result showed that there is an inverse relationship between health anxiety and age, marriage, and place of residence. There is an inverse relationship between becoming ill and age, the field of study, and place of residence. In addition, there is a direct relationship between this factor and gender. There is an inverse relationship between perceived negative consequences and age, place of residence, and use of public transportation, and there is a direct relationship between this factor and gender and the field of study. There is more fear of disease at younger ages, nurses, people with lower levels of education, men, those living away from family, and those who use public transportation.

There is an inverse relationship between health anxiety and age, marriage, and place of residence, and there is a direct relationship between health anxiety and place of residence and gender. Health anxiety associated with

COVID-19 is more common in women, younger people, married people, and those living away from family. There is a weak correlation between problem-focused adaptation strategy and place of residence. This approach is mostly adopted by those who live with family. Moreover, there is a direct link between emotion-focused adaptation strategy and the field of study and the use of public transportation, i.e., it is mostly adopted by those who use public transportation.

### Discussion

A pandemic is the outbreak of a disease in large geographical areas worldwide.<sup>[4]</sup> COVID-19 pandemic has been a global concern over the past year, causing both high mortality and economic, social, and political problems. COVID-19 pandemic also affects people’s mental health. In particular, it causes economic problems, declining incomes, inappropriate labels, stigma at work and school, mental disorders such as depression and anxiety, behavioral changes including abuse, posttraumatic stress, and, in the long run, fear.<sup>[4]</sup> Accordingly, COVID-19 is a threat to the health and economy of people around the world. In all countries, measures such as social distancing and reduction of daily activities have been adopted to reduce the spread of the disease. However, these measures have led to fear, anxiety, and negative emotions in communities.<sup>[21]</sup>

In this study, the mean level of anxiety associated with COVID-19 in participants was  $5.59 \pm 17.04$  using the Health Anxiety Inventory. In this regard, Solomou and Constantinidou found that 48% of participants had symptoms of moderate depression. According to their study, women between the ages of 18 and 29, students, and nonemployed people reported more

**Table 3: Findings of the coping strategy with coronavirus disease-2019 health anxiety in participants**

	Mean±SD	
Avoidance-focused coping strategy	Problem-focused coping strategy	Emotion-focused coping strategy
19.58±5.05	25.12±3.88	19.32±5.13

SD=Standard deviation

**Table 4: Relation of health anxiety and coping strategy**

	Avoidance-focused coping strategy	Problem-focused coping strategy	Emotion-focused coping strategy
General health concerns			
Pearson correlation	-0.37**	0.36**	0.31**
Significance (two tailed)	0.00	0.00	0.00
n	400	380	373
Becoming ill			
Pearson correlation	0.01	0.10*	0.37**
Significance (two tailed)	0.81	0.04	0.00
n	405	385	373
Perceived negative consequences			
Pearson correlation	-0.04	-0.13**	0.59**
Significance (two tailed)	0.39	0.00	0.00
n	405	385	373
Health anxiety			
Pearson correlation	-0.20**	0.18**	0.51**
Significance (two tailed)	0.00	0.00	0.00
n	400	380	373

\*Correlation is significant at the 0.05 level (two tailed), \*\*Correlation is significant at the 0.01 level (two tailed)



perceived negative consequences and were at greater risk for anxiety and depression. Younger people and men reported less depression but more personal health anxiety.<sup>[5]</sup> According to a study by Wang *et al.*, in China, 21% of students had moderate anxiety and 0.9% had severe anxiety.<sup>[22]</sup> In their study, Cao *et al.* found that 53.6% of people experienced psychological consequences following moderate and severe disease outbreaks.<sup>[23]</sup> Taylor *et al.* reported that 25% of the general population showed moderate-to-severe levels of health anxiety associated with COVID-19.<sup>[24]</sup> Drouin *et al.*, also reported moderate-to-high levels of health anxiety associated with COVID-19.<sup>[25]</sup> In a study by Son *et al.*, the symptoms of anxiety and depression associated with COVID-19 were high among the general population in North America and Europe, and students who were more affected by anxiety experienced greater psychological and emotional consequences.<sup>[9]</sup> The results of the present study, similar to the high prevalence of anxiety associated with COVID 19 disease, indicate that more attention needs to be paid to them.

Islam *et al.* reported 15% of students with moderate depression and 18% with severe anxiety. Using regression equations, they predicted that depression was more common among older students and tutors. They also found that 82% of students had symptoms of moderate-to-severe depression, 87% had symptoms of moderate-to-severe anxiety, and anxiety at home quarantine was higher among boys.<sup>[6]</sup> Accordingly, they argued that the government and universities should take measures to reduce the anxiety and depression caused by quarantine; otherwise, the delay and economic problems will cause more depression and anxiety in students.<sup>[6]</sup>

Son *et al.* reported that 71% of students stated that they had high levels of anxiety and stress about the COVID-19 pandemic, and only 5% used psychological counseling.<sup>[9]</sup> 91% reported fears about their health and the health of loved ones,<sup>[9]</sup> and more than third reported concerns about their family, such as the elderly, pregnancy, and having children. The researchers also argued that 86% reported sleep disturbance, which was severe in 38% of cases.<sup>[9]</sup> Furthermore, Parlapani *et al.* found that several participants reported high levels of COVID-19-related fear (35.7%) and moderate-to-severe depressive symptoms (22.8%), while a significant proportion reported moderate-to-severe anxiety symptoms (77.4%). Women scored altogether significantly higher than men. They emphasized the need for preventive and supportive decisions.<sup>[26]</sup> Due to the high prevalence of mental illness following COVID 19, it is necessary to find appropriate solutions to adapt to it.

Son *et al.* concluded that there are high levels of health anxiety associated with the outbreak of COVID-19

and different approaches to coping are adopted by different individuals. They reported that 23% of people adopted negative strategies such as sleeping long, distancing themselves from others, doing other people's tasks, smoking, and drinking alcohol. One-third of people adopted positive adaptation strategies, such as meditation, breathing exercises, spiritual exercises, and routine work. Most people used exercises, social programs, and social services. The researchers stated that psychological counseling methods should be taught to students to prepare for coping because similar events may occur in the future.<sup>[9]</sup>

Solomou and Constantinidou reported high prevalence estimates of depression (62.9%), anxiety (63.6%), and stress (58.6%) in Bangladeshi university students.<sup>[5]</sup> About 48.14% ( $n = 960$ ) showed a moderate-to-severe level of depression, 38.48% ( $n = 775$ ) showed a moderate-to-severe level of anxiety, and 18.04% ( $n = 366$ ) had suicidal thoughts. A majority of participants ( $n = 1443$ , 71.26%) indicated that their stress/anxiety levels had increased during the pandemic. Less than half of the participants ( $n = 882$ , 43.25%) indicated that they were able to cope adequately with the stress related to the current situation.<sup>[6]</sup> They stated that living with family members reduces depression and anxiety because the family environment has a positive effect on mental health and people's experiences of depression and anxiety.<sup>[6]</sup> They argued that the pandemic had a profound effect on economic pressures on families. Most low-income families had more concerns, and higher-income students had fewer concerns.<sup>[6]</sup> It is important to use the right approach to coping with anxiety. Improper adaptation can lead to more challenges.

Welch *et al.* also stated that COVID-19 had a great impact on people's lives<sup>[27]</sup> and emphasized that interactive counseling methods have a greater impact on reducing anxiety.<sup>[27]</sup> According to Ellis *et al.*, spending time with family or friends, physical activity, and doing homework are adaptive strategies adopted by individuals.<sup>[12]</sup> Vagni *et al.* have stated that adaptive strategies help people better cope with stress.<sup>[28]</sup> Besides, the problem-focused adaptation strategy helps to better adapt.<sup>[28]</sup> Makarowski *et al.* concluded that denial and drug abuse are negative adaptation strategies and the problem-focused strategy should be taught to individuals.<sup>[29]</sup> Islam *et al.* reported 37% anxiety and 79% panic attacks in Bangladesh.<sup>[30]</sup> They suggested adaptation strategies that include (i) employing preventative measures to cope with COVID-19-related concerns, (ii) staying connected with friends and family members, (iii) engaging in regular physical exercise, (iv) getting enough sleep, (v) avoiding alcohol and drug use, (vi) using digital technologies in a balanced manner, and (vii) getting professional help for mental health concerns and stress.<sup>[30]</sup>

Domínguez-Salas also reported 71% of mental disorders,<sup>[31]</sup> stating that the greatest concern was the lack of knowledge about the disease and that the most common preventive behavior was handwashing. According to the researchers, the most common strategy was to acquire knowledge and counseling,<sup>[31]</sup> and emotional psychological counseling was helpful.<sup>[31]</sup> Thomas and Barbato concluded that positive religious adaptations have an effect on mental health, reduce the risk of depression, and can be useful in adaptation.<sup>[32]</sup> Balhara *et al.* reported that in 50% of students who used computer games, health anxiety associated with COVID-19 decreased by 14%.<sup>[33]</sup> Therefore, they proposed computer games as one of the adaptation strategies that can be used optimally.<sup>[33]</sup> According to Wang *et al.*, the high prevalence of anxiety and depression is worrying,<sup>[34]</sup> and providing accurate information and reliable sources and using useful mobile applications can be helpful in this regard.<sup>[34]</sup> Drouin *et al.* suggested that a social media program is effective in reducing anxiety and depression, provided that appropriate programs are used.<sup>[25]</sup> Rodenstein *et al.* argued that social distancing has many detrimental effects on individuals and mobile applications can be used to reduce these detrimental effects.<sup>[35]</sup> Using an emotion-focused approach will only help reduce anxiety and lead to more challenges in the long run. Due to the importance of education, especially in nurses and medical staff, it is necessary to pay more attention to teaching problem-oriented adaptation methods and to give the necessary training to students in this field.

The results of the present study indicated that there is an inverse relationship between avoidance-focused adaptation strategy and general health concerns and between problem-focused adaptation strategy and perceived negative consequences. In addition, there is a direct relationship between problem-focused adaptation strategy and general health concerns and perceived negative consequences and between emotion-focused adaptation strategy and the three factors, general health concerns, becoming ill, and perceived negative consequences. Based on the results of the study as well as reviewing the literature, it is concluded that there is a high probability of the spread of anxiety and adopting an inappropriate adaptation strategy following the COVID-19 pandemic and home quarantine. Therefore, the problem-focused adaptation strategy should be taught to students to increase their preparedness and the community in the face of similar crises.

### Limitations and recommendation

The most important limitations of the study were completion of questionnaires online, which did not allow for careful examination of participants and monitoring the completion of questionnaires and

reduced communication with participants. Hence, for reducing the impact of it, we called to participants and ask them to complete the questionnaires.

## Conclusion

The level of health anxiety associated with COVID-19 was higher in female, young and married students, and those living away from family. Furthermore, the problem-focused adaptation strategy should be further taught so that students can better cope with the health anxiety associated with COVID-19 and similar diseases. Results of this study have implications for policymakers demonstrating the need for elective mental health programs and guidance for the implementation of public health strategy.

### Availability of data and material

The datasets generated and analyzed during the current study are not publicly available due to an agreement with the participants on the confidentiality of the data but are available from the corresponding author on reasonable request.

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### Conflicts of interest

There are no conflicts of interest.

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