



Prediction of psychological distress based on coronavirus anxiety and self-care among Iranian adolescents during the coronavirus epidemic

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Original Article

Abstract

BACKGROUND: The coronavirus disease-2019 (COVID-19) disease had a negative impact on adolescents' physical and psychological health. This study aimed to investigate the association between coronavirus anxiety and self-care with psychological distress among Iranian adolescents during the coronavirus epidemic.

METHODS: This was a descriptive-correlational study conducted on 419 Iranian adolescents in March 2021, in which the convenience method was adopted for sampling. An anonymous self-administered questionnaire was used, which included Corona Disease Anxiety Scale (CDAS), Corona Self-Care Questionnaire (CSCQ), and Kessler Psychological Distress Scale (K10). The data were analyzed using the SPSS software and also Pearson correlation coefficient and stepwise regression tests.

RESULTS: The results showed that there was a significant relationship between coronavirus anxiety ($r = 0.279$, $P < 0.001$) and self-care ($r = -0.265$, $P < 0.001$) with self-care. The results also indicated that coronavirus anxiety and self-care could predict approximately 17% of the variance in psychological distress ($R^2 = 0.168$; $F = 13.55$; $P < 0.001$).

CONCLUSION: Due to the role of coronavirus anxiety and self-care in predicting the psychological distress among Iranian adolescents during the coronavirus epidemic, it is suggested to design interventions to improve psychological distress.

KEYWORDS: Anxiety; Self-Care; Psychological Distress; Adolescents; Coronavirus

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Introduction

The coronavirus disease-2019 (COVID-19) quickly became a global epidemic with a negative impact on human mental health and increased incidence of psychological problems.¹ The COVID-19 epidemic has posed a serious threat to human physical and

psychological health. Due to the novelty of this disease, many of its side effects are still unknown; however, various scientific evidence confirmed the association of this disease with many life-threatening diseases.² Concerns about the life-threatening consequences as well as socio-economic problems caused by COVID-19 have increased psychological problems in societies.³ Epidemiological findings worldwide indicated that a large part of people was involved in psychological distress during the COVID-19 pandemic.

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24.1 and 34.4% of people in Germany and China have experienced psychological distress during the COVID-19 pandemic, respectively.⁴ The prevalence of severe stress during the pandemic was 49% in a study among Iranians.⁵

Adolescents are more vulnerable to stress and anxiety during the COVID-19 pandemic because of their developmental characteristics.⁶ Additionally, the clinical characteristics of psychological distress have not been well established across the Iranian adolescents during the epidemic, however a generally increased level of mental distress has been reported in other countries.⁷ Psychological distress is associated with poor academic performance, chronic mental disorders, and substance use in school age children.⁸ From a prevention perspective, this implies a greater need to identify the factors affecting it.

Coronavirus anxiety is one of the factors affecting psychological stress during the COVID-19 epidemic. Anxiety is common during COVID-19 and it seems to be mostly due to the unknown ambiguity of people about this disease. This fear reduces the immunity in humans and is associated with anxiety in them.⁹ The coronavirus anxiety is defined as the fear of developing the disease due to the lack of definitive treatment as well as its unknown and chronic nature.¹⁰ There is evidence indicating that coronavirus anxiety is associated with stress and psychological problems. Lee *et al.*, in a cross-sectional study with American workers, found that coronavirus anxiety explained additional variances of depression, generalized anxiety, and death anxiety.¹¹ In a cohort study among Canadian pregnant women, Berthelot *et al.* showed that coronavirus anxiety was associated with more psychological distress and psychiatric symptoms.¹²

Due to the nature of the coronavirus anxiety, self-caring behaviors can make people safe and reduce anxiety and psychological stress. Because there is currently no specific

treatment for this disease, self-care is the most effective option in preventing this viral disease. Self-care is a practice where everyone uses their knowledge, skills, and abilities as a source of self-improvement in their health status.¹³ Moreover, appropriate self-care guidelines can be used as effective ways to reduce the COVID-19 outbreak and improve health quality.¹⁴ There is some evidence to support an association between self-care and psychological stress. In a cross-sectional study among Australian university students, Di *et al.* found that self-care behaviors were associated with lower mental health risk among students.¹⁵

A review of research literature indicated that adolescents' mental health has received less attention during the coronavirus epidemic in Iran and partly in other countries. The essential need to care for infected people has limited attention to the health of other strata, especially adolescents. Due to the negative consequences of psychological distress in adolescents, identifying effective factors can help improve their health. As a result, this study aimed to investigate the association between coronavirus anxiety and self-care with psychological distress among Iranian adolescents during the coronavirus epidemic.

Methods

This was a descriptive correlational study. The statistical population included all Iranian adolescents aged 10 to 19 years in March 2021. The sample size was determined by Cochran's formula for an unlimited community; As a result, at an error level of 0.05, 384 subjects were entered the study and 10% was added to the estimated sample size (423 samples) due to the possibility of incomplete questionnaires as well as the presence of outdated data (responses based on a specific pattern). After data clean-up, 419 questionnaires were analyzed. The subjects were selected by the convenience sampling method. The study

inclusion criteria were 1) age range of 10 to 19 years and 2) informed consent to participate in the study (electronically via Google Form). The following questionnaires were used to collect the data.

Corona Disease Anxiety Scale (CDAS): This scale was developed for measuring anxiety related to coronavirus disease with 18 items. Each item is answered based on a four-point Likert scale, with scores of 0-3 for the options of never, seldom, frequently, and always, respectively. The range of scores in this scale varies between 0 and 54. The cut-off score for detecting severe coronavirus anxiety was 29. Alipour et al. validated this scale in the Iranian population. The Guttman's λ^2 value for the whole questionnaire was obtained as ($\lambda = 0.922$), Cronbach's alpha coefficient for psychological symptoms as ($\alpha = 0.879$), physical symptoms as ($\alpha = 0.861$), and for the whole questionnaire as ($\alpha = 0.919$).¹⁰

Coronavirus self-care questionnaire (CSCQ): The coronavirus self-care questionnaire was developed focusing on self-care behaviors in the coronavirus epidemic period. This questionnaire has 10 items and the responders specify their level of agreement to a statement typically on a five-point Likert scale, with scores 1-5 for the options of strongly disagree, disagree, neither agree nor disagree, agree, and strongly agree, respectively. The responses were summed up, providing a total score between 10 and 50. The questionnaire is self-administered. Bayat et al. evaluated content validity ratio (CVR) and content validity index (CVI) for this scale as 0.75 and 0.81, respectively, in addition, the Cronbach's alpha coefficient was 0.76.¹⁶

Kessler Psychological Distress Scale (K6): This scale consists of 6 items assessing nonspecific psychological distress and examining its frequency in the past month. The responses to each item were rated on a 5-point Likert scale, ranging from "never" to "always" with scores 0-4, respectively. The responses were summed

up, providing a total score between 0 and 24. This scale is available in both self-administered and interview versions. In this study, we used the self-administered version of the instruments. Hajebi et al. assessed adaptation and validation of this scale. The Cronbach's alpha coefficient was 0.92 among the Iranian population. The optimal cutoff score for detecting any mood or anxiety disorder in the past 30 days was 10. At these cutoff points, the scale had a sensitivity of 0.73, specificity of 0.78, and positive predictive value of 0.52, respectively.¹⁷

Due to the closure of schools and the limitations and health considerations related to the epidemic, the questionnaires were distributed virtually through the Google Form web application. The link to complete the questionnaire along with a guide text was published on social networks. At the beginning of the questionnaire, explanations were provided about the objectives of the study, and it was guaranteed that to complete the questionnaire, there was no need to register to identity information. Before completing the questionnaires, an informed consent form was placed at the beginning of the questionnaire and adolescents participated in the study if they desired. Moreover, the data were reported with numerical codes. To prevent non-registration of answers, all items of the questionnaire were defined as "Required" in the Google Form online questionnaire, and it was necessary to register all the answers to send the questionnaire to the server. However, the data was cleaned after entering into the software. Then, the data were analyzed using the SPSS software (version 16, SPSS Inc., Chicago, IL, USA) and Pearson correlation coefficient and stepwise regression tests. The protocol of the present study was approved by the core of counseling in the Ministry of Education (Branch of Qom Province, Iran) with the code No. 2537/33862/710.

Results

A total of 419 (53.2% females) adolescents completed the questionnaires. The mean \pm standard deviation (SD) age of the students was 14.9 ± 2.8 years (range: 10-19). Almost half of the subjects were junior high school students ($n = 225$; 53.8%). The majority of the participants ($n = 162$; 38.7%) were 14-15 years old, followed by 16-17 years old ($n = 91$; 21.5%), 12-13 years old ($n = 82$; 19.6%), 18-19 years old ($n = 65$; 15.5%), and 10-11 years old ($n = 91$; 21.5%), respectively.

Figure 1 shows that psychological distress and coronavirus anxiety move in line with each other. In the different age groups, as coronavirus anxiety increases, so does psychological distress, and conversely. Among all adolescents, 26.3% (23.3% in males and 23.3% in females) had psychological distress in the past month. 36.8% (34.1% in males and 39.8% in females) reported severe coronavirus anxiety. In both sexes, 18-19 year-old adolescents had more psychological distress and coronavirus anxiety than other age groups. The descriptive statistics and correlation of variables are presented in table 1. The results of the Pearson correlation coefficient test showed that there was a

significant positive relationship between coronavirus anxiety ($r = 0.279$, $P < 0.001$), mental ($r = 0.211$, $P < 0.001$) and physical symptoms ($r = 0.196$, $P = 0.003$) with psychological distress.

The results of the stepwise regression analysis indicated that in the first step, coronavirus anxiety was entered in the model. In this step, correlation and coefficient of determination (R^2) were 0.299 and 0.090, respectively. The last step in the stepwise regression analysis was the basis of calculation, and in the second step, self-care was entered. In the last step, the results showed that coronavirus anxiety and self-care predicted approximately 17% of changes in psychological distress among Iranian adolescents during the coronavirus epidemic (Table 2).

Discussion

This study aimed to investigate the association between coronavirus anxiety and self-care with psychological distress in Iranian adolescents during the coronavirus epidemic. The results showed that coronavirus anxiety was associated with psychological distress (Table 1, $P < 0.010$) and could predict its changes (Table 2, $P < 0.010$).

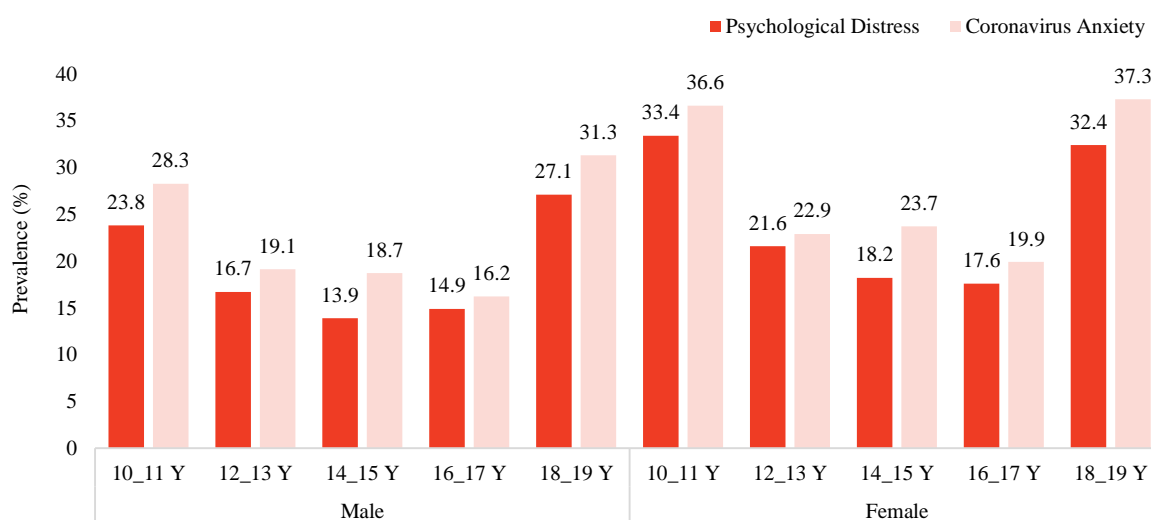


Figure 1. The prevalence of psychological distress and coronavirus anxiety in the different age groups

Table 1. Descriptive statistics and correlation of variables

Variables	M	SD	1	2	3	4	5
1. Coronavirus anxiety	16.30	7.16	1				
2. Mental symptoms	7.21	2.41	0.623**	1			
3. Physical symptoms	8.54	1.98	0.428**	0.511**	1		
4. Self-care	36.97	2.77	-0.198**	-0.188**	-0.043	1	
5. Psychological distress	6.62	4.20	0.279**	0.211**	0.196**	-0.265**	1

*P < 0.050; **P < 0.010; M: Mean; SD: Standard deviation

This correlation was positive, and it indicated that their changes were consistent. Lee et al. found that coronavirus anxiety explained additional variance in depression, generalized anxiety, and death anxiety.¹¹ Berthelot et al. showed that coronavirus anxiety was associated with more psychological distress and psychiatric symptoms.¹² In recent years, many studies have shown the role of anxiety in psychological stress. Hope and Henderson¹⁸ and Kempeneers et al.¹⁹ in separate studies suggested that anxiety had an effective role in psychological stress. However, no evidence was found for an association between coronavirus anxiety and psychological distress, which shows the innovation of the findings of this study.

However, it is necessary to mention when adolescents are in a situation where the consequences of the disease are ambiguous and there is no effective treatment, they suffer from conflict and cognitive inconsistency. If adolescents do not have sufficient coping skills to deal with coronavirus anxiety, they cannot adapt to the conditions of the epidemic, and their psychological stress increases.²⁰ It is necessary to use preventive approaches because people, who have substantial coronavirus anxiety due to high psychological stress, try to receive more health services,

which can lead to more health problems among them.²¹ As a result, it is necessary to pay attention to coronavirus anxiety in the form of extracurricular educational programs among Iranian adolescents.

Moreover, there was a significant negative association between self-care and psychological distress (Table 1, P < 0.010), and indicated an inverse relationship between the two variables. Furthermore, self-care was able to predict changes in anxiety (Table 2, P < 0.010). In a study on American workers, O'Brien et al. found that preventive health behaviors were associated with distress.²² Di et al. showed that self-care behaviors were associated with lower mental health risk among students.¹⁵ St-Pierre et al. reported that there was a mutual association between health behaviors and psychological distress among Canadian adults.²³

A review of the research literature showed the previous studies did not cover self-care behaviors during the coronavirus pandemic, or mental health was evaluated instead. Therefore, in general, the results of this study are inconsistent with previous studies which showed that self-care behaviors could reduce psychological distress. However, as this study examined self-care behaviors during the coronavirus pandemic, it added to the findings in the research literature.

Table 2. Stepwise regression for prediction of psychological distress

Step	Variables	B	β	R	R ²	t	P	F	P
1	Constant	20.920	1.260	0.299	0.090	4.163	0.0020**	13.29	< 0.0001**
	Coronavirus anxiety	0.398	0.109			6.642	0.0030**		
2	Constant	32.550	3.480	0.410	0.168	3.383	0.0040**	13.55	< 0.0001**
	Coronavirus anxiety	0.398	0.104			5.489	0.0020**		
	Self-care	-0.381	-0.107			4.028	< 0.0001**		

*P < 0.050; **P < 0.010

It seems that the higher the level of self-care, the more people are cautious about their health, think about health promotion, and follow the health instructions. As a result, social support, responsibility, and stress management increase, hence reducing psychological distress.²⁴ Self-caring includes behavior modification, and due to this viral infection, the level of self-caring against the virus is increased through the use of masks, continuous hand washing, and social distancing. Self-caring in these cases can reduce anxiety as a free treatment to help improve mental health and reduce stress.²⁵ So, by training and promoting self-care, psychological distress can be reduced during an epidemic.

Virtual distribution of the questionnaires was one of the limitations because it was not possible to control the inclusion criteria accurately. Low sample size and convenience sampling were other limitations of the present study. Given the role of coronavirus anxiety and self-care in the prediction of psychological distress among Iranian adolescents during the coronavirus epidemic, it is suggested that intervention programs be designed to improve psychological distress. Because schools are closed, these tutorials can be provided virtually. For example, organizing extracurricular sessions virtually for students to increase coping skills and self-care training can be useful. This training can be provided to students by health teachers as well as school counselors.

Conclusion

Our study indicated that coronavirus anxiety and self-care had a significant impact on the psychological distress of Iranian adolescents during the coronavirus epidemic. Considering the role of coronavirus anxiety and self-care in the prediction of psychological distress among Iranian adolescents during the coronavirus epidemic, it is needed to pay attention to adolescents' mental health.

Conflict of Interests

Authors have no conflict of interests.

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