

Fear and anxiety in girls aged 7 to 11 years old and related factors during the coronavirus pandemic

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Abstract

Children are one of the most vulnerable groups in crises. The psychological consequences of COVID-19 in children must be considered. This study aimed to assess the fear and anxiety of COVID-19 in primary school girls. It is a descriptive correlational study to investigate schoolgirls' fear and anxiety of covid-19 in southeastern Iran. Data were collected using the fear of coronavirus questionnaire and the Corona Disease Anxiety Scale. The mean score of fear and anxiety of corona disease was 11.49 ± 6.59 and 17.67 ± 10.87 , respectively. The bivariate analysis showed a significant association between fear and anxiety of corona disease, a single child ($p = .025$ and $p = .006$), and a mother's level of education ($p = .01$). In other words, girls who were single child had a significantly higher level of fear and anxiety than other girls and the girls whose mothers had diploma had a higher level of fear and anxiety than girls whose mothers had Ph.D. Since fear and anxiety can be affected by factors such as culture, education level, and birth rate, it is recommended that this study be performed in other communities as well.

Keywords

Fear, anxiety, girls, coronavirus, pandemic

Background

The spread of Covid-19 has created waves of anxiety and fear around the world, including in Iran (Murdoch & French, 2020; Asadi et al., 2020). Because there is still no definitive treatment for this disease, many people around the world suffer from pathological fear and anxiety, which has disrupted their many activities. (Zhu et al., 2020). On the other hand, fear of being infected with the virus has led to the closure of many educational institutions and schools (Liu et al., 2020b).

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School closures and lockdown due to the prevalence of COVID-19 can have devastating effects on children's physical and mental health (Sprang & Silman, 2013; Wang et al., 2020) because when they are on holiday, they rarely do physical activity and adhere to a proper sleep pattern and diet (Mason et al., 2018). This phenomenon is exacerbated when they are staying at home. Also, the emergence of stressful stimuli at home such as long-term fear of infection, unpleasant thoughts, lack of communication with classmates, friends, teachers, inadequate space at home, and in some cases financial and economic problems of parents can have lasting effects on mental health of children (Brooks et al., 2020). It should be noted that children quarantined due to COVID-19 would be more prone to severe psychological problems than non-quarantined children. Researchers argued that the mean scores of anxiety disorders such as posttraumatic stress in children quarantined at home in the H1N1 Influenza Pandemic were four times higher than that of non-quarantined children (Sprang & Silman, 2013).

According to reports, fear of COVID-19 can be even more harmful than coronavirus infection (Ren et al., 2020). Therefore, it is important to describe the psychological consequences in children during epidemics, and limited studies have addressed the devastating psychological effects of adverse events on children. Hoven et al. (2005), to determine the prevalence and correlates of probable mental disorders among New York City, NY, public school students 6 months following September 11, 2001, argued that Anxiety, depression, lethargy, impaired social interactions, and loss of appetite have been considered as psychological manifestations (Hoven et al., 2005). A study in China found that children aged 3 to 6 years old showed irritability, clinginess, and signs of fear of parental infection with COVID-19 more than older children. Fear and anxiety were also higher in children living in areas that were very vulnerable (Jiao et al., 2020). Studies have shown that girls are more at risk for anxiety disorders such as social anxiety and panic than boys are. The results of a study in Iran (2009) reported anxiety disorder as the most common emotional disorder in primary school girls. Girls' greater readiness to express emotions, happiness, sadness, and fear versus boys' greater readiness to express anger may explain the importance of studying anxiety disorders in girls (Qarali & Saberi, 2020). In general, since the physical and mental health and productivity of students in the future life are rooted in their childhood years, so it is inevitable to pay attention to the psychological issues caused by COVID-19 disease in children who unintentionally experience these high-risk conditions. Since the researcher did not find a similar study in this regard, the current study conducted with the question of how much is the fear and anxiety in girls aged 7 to 11 years old during the coronavirus pandemic and this hypothesis that, there is a correlation between anxiety and fear from covid-19 with background characteristics in girls aged 7 to 11 years old in southeastern Iran.

Methods

Study Design

It is a descriptive correlational study to investigate schoolgirls' fear and anxiety of covid-19 in southeast Iran. This study lasted from July 2020 to November 2020.

Sample and Setting

This study was performed on primary school girls aged 7 to 11 years old in southeastern Iran. Therefore, a school was randomly selected from each district, then the list of students was taken from the school principal and they were contacted using a table of random numbers. 340 participants were considered as the sample size according to pilot study and correlation coefficient, 95% confidence, and 90% test power. The inclusion criterion was the ability to communicate in Persian.

Measures

Data were collected using a demographic information questionnaire, fear of coronavirus questionnaire, and the Corona Disease Anxiety Scale (CDAS).

The demographic information questionnaire includes age (yr.), grade, an only child, number of children, mother's level of education, father's level of education, mother's job, father's job.

The fear of coronavirus questionnaire was developed and validated in Iran (Kwasi Ahorsu et al., 2020). After panel review and corrected item-total correlation testing, seven items with acceptable corrected item-total correlation (0.47–0.56) were retained and further confirmed by significant and strong factor loadings (0.66–0.74). More specifically, reliability values such as internal consistency ($\alpha=0.82$) and test-retest reliability (ICC=0.72) were acceptable. Concurrent validity was supported by the Hospital Anxiety and Depression Scale (with depression, $r=0.425$ and anxiety, $r=0.511$) (Montazeri et al., 2003) the Perceived Vulnerability to Disease Scale ($r=0.483$) (Ahmadzadeh et al., 2013). This tool consists of seven items on the five-point Likert scale (strongly disagree=0 and strongly agree=4). The highest and lowest scores obtained by the respondents were between 0 and 28 with higher scores reflecting a higher level of fear of coronavirus. In the current study, the content validity index was determined to be 0.92. Also, the reliability (internal consistency) of this questionnaire was confirmed with a Cronbach's alpha coefficient of 0.88.

The Corona Disease Anxiety Scale (CDAS) has been prepared and validated in Iran to measure anxiety caused by the prevalence of coronavirus (Alipour et al., 2020). The Guttman's $\lambda 2$ 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 ($\alpha=0.919$). This tool consists of 18 items and two subscales. Items 1 to 9 measure psychological symptoms and items 10 to 18 measure physical symptoms. This tool is scored on a four-point scale. Therefore, the highest and lowest scores are between 0 and 54 with higher scores indicating a higher level of anxiety in individuals. The total score of anxiety severity is divided into three categories: mild (0–16), moderate (17–29), and severe (30–54). In the current study, the content validity index was determined to be 0.91 by faculty members. Cronbach's alpha coefficient was calculated to be 0.99 through the completion of this questionnaire by participants to confirm the reliability (internal consistency).

Data Collection

An online survey was conducted through social media (WhatsApp) and personal contacts. A brief written description of the study and its objectives was sent to participants. We instructed the children and their parents about how to participate and fill in their data. The online survey evaluated the sociodemographic characteristics and level of fear and anxiety of corona.

Ethical Considerations

The permission of the Ethics Committee code IR.KMU.REC.1399.170 and NO: 99000108, as well as permits and a letter of introduction from the School of Nursing & Midwifery, were obtained. Participation in this study was voluntary. All participants were explained about the goals and process of the study and informed consent was obtained from the children's parents.

Data Analysis

SPSS 25 was used for data analysis. Frequency, percentage, mean and standard deviation were used to describe the demographic characteristics and the scores of fear and anxiety in participants. To determine the relationship between fear and anxiety with variables such as age groups, grade, number of children, father level of education, mother level of education, father job, mother job was used of ANOVA. Also, an independent t-test was used to determine the relationship between fear and anxiety with variables such as single child was used of. The significance level was considered 0.05.

Results

The mean age of the participants was 10.07 ± 1.71 . Other participants' characteristics are presented in Table 1. Regarding the sources of fear and anxiety, the results showed that media (52.8%) and social networks (41.9%) were the most important sources of fear and anxiety in girls, respectively. Also, none of these sources had a significant relationship with participants' fear and anxiety (Table 2).

The mean score of fear of corona disease was moderate (11.49 ± 6.59). Most of the participants agreed with items of "I am very afraid of Corona," "thinking about Corona upsets me," "I am afraid of losing my life because of the corona," and "I get nervous or anxious when watching news and stories about Corona on social media" (Table 3).

The mean score of corona disease anxiety was moderate (17.67 ± 10.87). Also, fifty-five participants (16.2%) had severe anxiety. Most cases that have always involved participants included: "I am very worried about the prevalence of corona," "I am afraid of being infected with corona," and "I am worried about the spread of corona to those around me" (Table 4).

The bivariate analysis showed a significant positive association between fear and anxiety of corona disease with single child and mother's level of education. In other words, girls who were single child had a significantly higher level of fear and anxiety than other girls. Bonferroni post hoc test showed that girls whose mothers had diploma had a higher level of fear and anxiety than girls whose mothers had PhD (Table 1). No significant differences were observed between sources of fear and anxiety of corona disease (Table 2). Based on the data of these results, there is a direct and significant relationship between fear and anxiety ($r=0.84$; $p < .001$). (Table 1). No significant differences were observed between sources of fear and anxiety of corona disease (Table 2). Based on the data of these results, there is a direct and significant relationship between fear and anxiety ($r=0.84$; $p < .001$).

Discussion

This study aimed to investigate the fear and anxiety of COVID-19 disease in primary school girls in southeastern Iran. According to the results, about 30% to 48.5% of the primary school girls had moderate to severe fear and anxiety. Chen et al. (2020) in China reported that 22.18% of the girls aged 6 to 15-years experienced anxiety compared with boys. Garcia de Avila et al. (2020) in Brazil reported a 21% prevalence of anxiety in girls aged 6 to 12 years during the COVID-19 epidemic. Zolfaghari and Elahi (2020) in Iran reported a moderate level of anxiety in preschool and elementary school children during the COVID-19 epidemic. Another study (2003) reported that 20% of American children and adolescents experienced generalized anxiety disorder during the lockdown caused by the SARS epidemic (Sprang & Silman, 2013). Although fear is a natural response of the human body and mental system to protect itself from danger, the coronavirus phobia is spreading as a kind of warning of the consequences during and after the Corona pandemic (Eng et al., 2011; Jiang et al., 2020). A study from outside the United States has reported panic attacks in children during the

Table 1. Demographic characteristics of the participants and their associations with fear and anxiety of COVID-19 (N=340).

Variables	Frequency (Valid percent)	Fear of corona disease		Anxiety of corona disease	
		Mean (SD)	Statistical test/ p-value	Mean (SD)	Statistical test/ p-value
Age (year)					
7	27 (7.9)	10.63 (7.07)	F= 1.47 p=.19	16.7 (11.73)	F= 1.07p=.38
8	43 (12.6)	11.46 (5.92)		18.09 (10.57)	
9	59 (17.4)	12.47 (6.87)		19.91 (12.82)	
10	72 (21.2)	11.75 (6.97)		17.88 (10.64)	
11	52 (15.3)	12.88 (5.58)		18.50 (9.43)	
12	63 (18.5)	10.33 (7.04)		15.65 (10.55)	
13	24 (7.1)	9.33 (5.65)		15.33 (9.31)	
Grade					
1	36 (10.6)	10.42 (6.34)	F= 1.28 p=.27	17.33 (11.33)	F=0.77 p=.57
2	32 (9.4)	12.03 (6.30)		17.50 (10.24)	
3	64 (18.8)	12.11 (6.96)		19.47 (13.03)	
4	67 (19.7)	12.82 (7.04)		18.61 (10.73)	
5	51 (15.0)	10.57 (6.06)		16.65 (9.75)	
6	90 (26.5)	10.82 (6.41)		16.46 (9.94)	
Single child					
Yes	83 (24.4)	12.90 (6.46)	t=2.26 p=.025	20.52 (10.94)	t=2.78 p=.006
No	257 (75.6)	11.04 (6.58)		16.75 (10.71)	
Number of children					
1	136 (52.9)	11.12 (6.53)	F=0.31 p=0.82	16.64 (10.68)	F=0.23p=0.87
2	106 (41.2)	11.14 (6.68)		16.60 (10.60)	
3	13 (5.1)	9.31 (6.96)		18.31 (11.97)	
4	2 (0.8)	11.0 (5.66)		21.50 (19.09)	
Father level of education					
High school	6 (1.8)	12.5 (8.57)	F= 1.56 p=.19	18.5 (12.10)	F=0.78 p=.54
Diploma	60 (17.6)	13.28 (7.01)		19.52 (11.27)	
Bachelor	147 (43.2)	11.13 (6.43)		17.5 (11.15)	
Master	107 (31.5)	11.20 (6.42)		17.31 (10.28)	
PhD	20 (5.9)	10.05 (6.45)		15.0 (10.53)	
Mother level of education					
Diploma	61 (17.9)	13.41 (7.13)	F=4.64 p=0.01	20.23 (11.56)	F=3.66 p=.01
Bachelor	175 (51.5)	11.67 (6.57)		17.95 (11.06)	
Master	87 (25.6)	10.57 (5.90)		16.61 (9.79)	
PhD	17 (5.0)	7.41 (6.11)		11.0 (8.8)	
Father job					
Employee	188 (55.3)	11.23 (6.36)	F=0.24 p=.87	17.52 (10.55)	F=0.12 p=.95
Self-employed	134 (39.4)	11.79 (7.02)		17.81 (11.49)	
Retired	16 (4.7)	12.13 (6.16)		17.62 (10.22)	
Unemployed	2 (0.6)	11.0 (4.24)		22.0 (8.48)	
Mother job					
Employee	130 (38.2)	10.78 (6.72)	F= 1.09 p=.36	17.00 (11.28)	F=0.45 p=.72
Self-employed	50 (14.7)	11.26 (7.17)		17.14 (10.12)	
Retired	3 (0.9)	13.33 (4.93)		20.0 (14.0)	
Unemployed/ housewife	157 (46.2)	12.12 (6.30)		18.34 (10.76)	

F=ANOVA, t=Independent t test.

Table 2. Source of Fear of the participants and their associations with fear and anxiety of COVID-19.

Source of fear	Frequency (valid percent)	Fear of corona disease		Anxiety of corona disease	
		Mean (SD)	Independent t-test (p-value)	Mean (SD)	Independent t-test (p-value)
Has information from various sources made Corona afraid?					
Yes	246 (72.4)	11.5 (6.58)	0.06 (0.950)	17.75 (10.99)	0.23 (0.82)
No	94 (27.6)	11.46 (6.67)		17.45 (10.59)	
Parents behaviors					
Yes	64 (26.0)	12.41 (6.70)	1.28 (0.2)	19.26 (11.19)	1.28 (0.2)
No	182 (74.0)	11.19 (6.52)		17.22 (10.90)	
Social networks					
Yes	103 (41.9)	11.51 (6.43)	0.02 (0.98)	17.70 (10.03)	-0.06 (0.95)
No	143 (58.1)	11.50 (6.70)		17.79 (11.67)	
Medical staff					
Yes	74 (30.1)	10.99 (6.98)	-0.81 (0.42)	16.68 (11.77)	-1.01 (0.32)
No	172 (69.9)	11.73 (6.40)		18.22 (10.64)	
Friends					
Yes	95 (38.6)	11.34 (6.79)	-0.32 (0.75)	16.82 (11.02)	-1.05 (0.29)
No	151 (61.4)	151 (11.61)		18.34 (10.97)	
Radio and television					
Yes	130 (52.8)	11.82 (6.62)	0.80 (0.42)	17.81 (10.76)	0.08 (0.93)
No	116 (47.2)	11.15 (6.53)		17.69 (11.29)	
Internet					
Yes	52 (21.1)	11.15 (6.25)	-0.43 (0.67)	16.96 (10.19)	-0.58 (0.56)
No	194 (78.9)	11.60 (6.67)		17.96 (11.22)	
Satellite					
Yes	21 (8.6)	11.24 (7.22)	-0.3 (0.82)	15.95 (11.36)	-0.82 (0.41)
No	224 (91.4)	11.58 (6.5)		18.0 (10.93)	

Table 3. The participants' responses to fear of corona disease.

Items	Responses (N/%)				
	Strongly disagree	Disagree	No idea	Agree	Strongly agree
1. I am very afraid of Corona.	44 (12.9)	27 (7.9)	94 (27.7)	103 (30.3)	72 (21.2)
2. Thinking about Corona upsets me.	41 (12.1)	30 (8.8)	75 (22.1)	134 (39.4)	60 (17.6)
3. My hands get wet when I think of Corona.	153 (45.0)	108 (31.8)	38 (11.2)	33 (9.6)	8 (2.4)
4. I'm afraid of losing my life because of the corona.	84 (24.7)	63 (18.5)	68 (20.0)	75 (22.1)	50 (14.7)
5. I get nervous or anxious when watching news and stories about Corona on social media.	62 (18.2)	63 (18.5)	69 (20.3)	102 (30.0)	44 (12.9)
6. I can't sleep due to fear of coronary heart disease.	171 (50.3)	96 (28.2)	50 (14.7)	18 (5.3)	5 (1.5)
7. I get a heartbeat when I think about having coronary heart disease.	148 (43.5)	81 (23.8)	52 (15.3)	40 (11.8)	19 (5.6)

Corona epidemic (Kaba & Sari, 2020). Long-term quarantine for children seems to be an unpleasant and stressful experience. Therefore, presence in society and communication is necessary for the normal mental development and health of children (Liu et al., 2020a). Moreover, the prevalence of

Table 4. The participants' responses to Corona disease anxiety scale.

Items	Responses (N/%)			
	Never	Sometimes	Often	Always
1. Thinking about Corona makes me anxious.	40 (11.8)	180 (52.9)	74 (21.8)	46 (13.5)
2. I feel tense when I think about the corona threat.	86 (25.3)	147 (43.2)	67 (19.7)	40 (11.8)
3. I am very worried about the prevalence of corona.	28 (8.2)	99 (29.1)	92 (27.1)	121 (35.6)
4. I'm afraid to get a corona.	41 (12.1)	118 (34.7)	79 (23.2)	102 (30.0)
5. I think I might get a corona at any moment.	89 (26.2)	119 (35.0)	76 (22.4)	56 (16.5)
6. At the slightest sign, I think I have taken the corona and checked myself.	126 (37.1)	101 (29.7)	67 (19.7)	46 (13.5)
7. I am worried about the spread of corona to those around me.	50 (14.7)	89 (26.2)	84 (24.7)	117 (34.4)
8. Corona anxiety has disrupted my activities.	137 (40.3)	96 (28.2)	76 (22.4)	31 (9.1)
9. The media attention to Corona worries me.	83 (24.4)	122 (35.9)	87 (25.6)	48 (14.1)
10. Thinking about Corona has disturbed my sleep.	234 (68.8)	74 (21.8)	22 (6.5)	10 (2.9)
11. Thinking about Corona has made me hungry.	267 (78.5)	60 (17.6)	11 (3.2)	2 (0.6)
12. I get a headache when I think of Corona.	264 (77.6)	57 (16.8)	16 (4.7)	3 (0.9)
13. My body trembles when I think of Corona.	209 (61.5)	83 (24.4)	32 (9.4)	16 (4.7)
14. When I think of Corona, my body hair stands out.	227 (66.8)	80 (23.5)	26 (7.6)	7 (2.1)
15. Corona has become a nightmare for me.	171 (50.3)	89 (26.2)	45 (13.2)	35 (10.3)
16. My physical activity is reduced due to fear of corona.	148 (43.5)	83 (24.4)	69 (20.3)	40 (11.8)
17. It is difficult for me to talk about Corona with others.	191 (56.2)	89 (26.2)	39 (11.5)	21 (6.2)
18. I get a heartbeat when I think about Corona.	216 (63.5)	85 (25.0)	28 (8.2)	11 (3.2)

anxiety disorders during epidemics depends on influential factors such as gender, socio-economic, and cultural conditions and can affect the results of studies (Derakhshanpour et al., 2016). Therefore, it is recommended to study such disorders in children with different cultures.

In the present study, a statistically significant relationship was found between being an only child and anxiety and fear of corona. In other words, an only child showed more anxiety and fear of coronavirus. Taylor et al. (2008) considered being an only child as a factor influencing the negative psychological consequences during an influenza outbreak. In this study, having three or more children seemed to be somewhat protective against psychological distress. One study on the psychological and educational consequences of coronavirus in students found that by exacerbating the sense of loneliness, being an only child could have adverse psychological consequences for school children during the COVID-19 epidemic and home quarantine (Abolmaali Alhosseini, 2020). Therefore, it seems that an only child should be psychologically given much more attention during the corona pandemic. Because, when anxiety disorders persist, they are associated with a range of adverse outcomes including impaired occupational functioning (Jules et al., 2020; Percy et al., 2016).

Based on the findings, the mother's education level showed a significant relationship with anxiety and fear of coronavirus, so that children of the more educated mothers were less afraid and anxious. In line with these results, a study in Brazil found that children whose parents had a postgraduate or academic degree had lower anxiety scores during the COVID-19 epidemic than children whose parents had only primary education (Garcia de Avila et al., 2020). A study showed that children's perception of illness had a significant relationship with their anxiety about the disease (Zolfaghari & Elahi, 2020). Since children have limited cognitive capacity, they gain most of their information about the world around them with the help of their parents. Therefore, the mother's education can affect the child's perception of the disease and its anxiety consequences (Garcia de Avila et al., 2020). Another

study in Spain showed that children with well-educated mothers are less at risk of mental health disorders (Arroyo-Borrell et al., 2017). According to research, one of the main reasons for children's fear of the coronavirus is the lack of information about the virus, so parents must inform children about the coronavirus, without too much detail and in proportion to their level of development (Kaba & Sari, 2020). As shown in the present study, children will less experience fear and anxiety if they receive information from their parents.

According to the results of this study, media programs and social networks respectively were the most important sources of anxiety and fear in primary school girls. Asmundson and Taylor acknowledged that variables such as perceived vulnerability to disease, lack of information, and incorrect information received from the mass media can increase fear of the corona (Asmundson & Taylor, 2020). Studies have shown that exposure of children to scary news and reports in the media may lead to physical, emotional, and cognitive problems and ultimately increase anxiety (Kaba & Sari, 2020). According to UNICEF, it may be difficult for children to understand what they see on the Internet or television and to interpret what they hear. Therefore, they are more vulnerable to anxiety and stress. The organization advises parents to have honest and warm conversations with their children by asking open questions and hearing the answers of children and paying attention to the children's signs of anxiety during the epidemic of Corona (Ehmke, 2020).

The limitations of his research are as follows: first, the research tool is a self-report that can affect the results. Second, access to children was not possible, and data were collected via telephone contact and WhatsApp.

Conclusion

The results of the study show that girls aged 7 to 11 years suffer from annoying fear and anxiety about the corona pandemic that originates mostly from misunderstandings of media and social networks news, which can be partly reduced through simple and correct explanations of parents. Since fear and anxiety can be affected by factors such as culture, education level, and birth rate, it is recommended that this study be performed in other communities as well.

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