



The Relative Frequency of Anxiety and Its Correlation with Individual and Family Factors Among Adolescents in Shiraz, 2020: A Cross-Sectional Study

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Abstract

Background: Anxiety disorders are the most common mental health problems in adolescents. Uncontrolled anxiety disorders during this period not only negatively affect adolescents' current performance but can also have long-term negative consequences on their physical and mental health.

Objectives: This study is designed to investigate the relative frequency of anxiety and its correlation with individual and family characteristics among first-grade high school students in Shiraz, 2020.

Methods: This is a descriptive and analytical cross-sectional study, conducted on 360 first-grade high school students who were selected using a multi-stage sampling method in Shiraz, Iran. Data were collected through online questionnaire software, which included the Beck Anxiety Inventory and a Demographic Questionnaire, and were analyzed using SPSS software version 24.

Results: The relative frequency of anxiety disorders in the study samples was 59.7% (60.9% in girls and 56.6% in boys); among them, 13.1% experienced severe anxiety, 16.9% had moderate anxiety, and 29.7% had mild anxiety. The results of univariate analysis showed correlations between anxiety disorders and factors such as father's unemployment ($P = 0.04$), a history of physical and mental problems in teenagers ($P = 0.04$ and $P = 0.001$, respectively), and the lack of friendly relations between family members ($P = 0.001$). Additionally, the results of logistic regression analysis indicated that adolescents with mental illness and those lacking friendly relationships within their family had higher chances of experiencing anxiety disorders compared to other participants ($OR = 5.00$, $P = 0.04$ and $OR = 9.95$, $P = 0.002$, respectively).

Conclusions: In this study, mental illness and the lack of friendly relations between family members emerged as significant factors contributing to adolescents' anxiety. Therefore, identifying and addressing these related factors, along with timely diagnosis and treatment of this disorder in adolescents, should be prioritized by mental health officials.

Keywords: Anxiety, Adolescent, Anxiety Related Factors

1. Background

Mental health disorders represent a significant global public health challenge. Recent research indicates that the worldwide prevalence of mental health issues in children and adolescents ranges from 10 to 20%. Although anxiety can manifest at any age, it is particularly prevalent among adolescents. According to a report by the World Health Organization, an estimated 3.6% of adolescents aged 10 - 14 experience an anxiety disorder (1-3). In Iran, adolescents aged 10 to 14 exhibit the highest rates of psychiatric disorders, with anxiety

disorders being the most common. The prevalence of anxiety across different provinces in Iran ranges from 7% to 15% (4-6).

Various factors and characteristics, including gender, age, physical and cognitive health, mental function, social environment, life stressors, and family dynamics such as parents' education level, socioeconomic status, employment, family size, maternal mental health, and access to welfare services, can influence mental health (7). Despite the significance of identifying these issues as primary contributors to disability in this age group and their enduring impact throughout life, the mental

health needs of children and adolescents, particularly in low and middle-income countries, often go unaddressed. Efforts should be made to alleviate the burden of mental health problems in future generations and promote the comprehensive well-being of vulnerable children and adolescents worldwide (8).

Additionally, a significant portion of the population comprises student adolescents who, due to various factors such as physical and emotional development, identity exploration, fear of responsibility, apprehension about higher education or career choices, are under considerable stress and are highly susceptible to psychological distress (9). In this context, early identification of adolescents with anxiety disorders is crucial. Timely detection can help prevent potential complications and mitigate psychological harm in adolescents.

2. Objectives

Therefore, this study was conducted to investigate the prevalence of anxiety and its correlation with individual and family characteristics among first-grade high school students in Shiraz.

3. Methods

This is a descriptive-analytical and cross-sectional study. The research population in this study consisted of all high school students in Shiraz during the academic year 2020. Inclusion criteria were students enrolled in junior high schools in the four districts of Shiraz, and the willingness of both the individuals and their parents to participate in the study. Exclusion criteria included withdrawal from participation and incomplete completion of the questionnaire.

3.1. Sampling Method

A multi-stage method was employed for sample selection. In the first stage, three educational districts of Shiraz city were chosen through simple random sampling (lottery). From each selected educational area, the first-grade high schools were identified, and among them, one girls' school and one boys' school were randomly selected. All students who met the inclusion criteria were included in the study.

3.2. Data Gathering

After obtaining permission from Shiraz University of Medical Sciences and the Shiraz Department of Education, further permission was obtained from the principals of the selected high schools. Subsequently,

necessary information about this research was provided to the students and their parents, and the consent form was made available to them virtually. Questionnaires were then distributed using online questionnaire software. Students and their parents who were willing to participate in the study completed the questionnaires. Data collection lasted from September to December 2020. The response rate was 22%. Out of 1618 questionnaires sent during this period, 360 completed questionnaires were received.

The data collection tool used was the Beck Anxiety Inventory. This scale is a self-report instrument designed to measure the severity of anxiety in adolescents and adults. Comprising 21 items, the questionnaire prompts the respondent to choose one of four options for each item, indicating the severity of their anxiety. Each item describes common symptoms of anxiety, including mental, physical, and panic symptoms. The total score of the questionnaire ranges from 0 to 63, with scores falling within 0 - 7 indicating a normal state, 8 - 15 indicating mild anxiety, 16 - 25 indicating moderate anxiety, and 26 - 63 indicating severe anxiety (10). The questionnaire demonstrates high validity and reliability, with an internal consistency of 0.92 and item correlations ranging from 0.30 to 0.76. Various types of content validity, including simultaneous, structural, diagnostic, and factor validity, have been assessed for this test, all indicating its efficacy in measuring anxiety severity (11). This instrument has undergone psychometric evaluation in Iran by Kaviani and Mousavi with reported values of CVI = 0.72, one-month interval test-retest reliability = 0.83, and internal consistency = 0.92 (12).

Another tool utilized in this study was a demographic characteristics questionnaire developed by the researchers. This questionnaire consists of 18 questions answered with "yes" or "no" responses and is designed to collect individual and family characteristics across six dimensions: Economic status, student health, crisis situations, vulnerable family situations, relationships between family members, and other individual and family characteristics. This self-reported questionnaire assesses the presence or absence of characteristics such as physical and mental illness and economic status in participants.

Data analysis was performed using SPSS software version 24, employing the chi-square test and logistic regression.

4. Results

In this study, 360 students aged between 13 and 15 years participated. Among them, 261 (72.5%) were girls,

Table 1. Anxiety Levels in Participants by Gender ^{a, b}

Level of Anxiety	Male Frequency	Female Frequency	Total Frequency
Normal	43 (11.9)	102 (28.3)	145 (40.3)
Mild	33 (9.2)	74 (20.6)	107 (29.7)
Moderate	16 (4.4)	45 (12.5)	61 (16.9)
Severe	7 (1.9)	40 (11.1)	47 (13.1)
Total	99 (27.5)	261 (72.5)	360 (100.0)

^a Chi-square test; P-value = 0.192.^b Values are expressed as No. (%).

and 99 (27.5%) were boys. Of the participating students, 145 (40.3%) reported no anxiety, while 215 (59.7%) exhibited varying degrees of anxiety. Within this group, 29.7% experienced mild anxiety, 16.9% reported moderate anxiety, and 13.1% indicated severe anxiety. There was no significant correlation observed between gender and anxiety ($P = 0.192$) (Table 1).

Table 2 presents the frequency and percentage of individual and family characteristics among students, along with their correlation with anxiety based on univariate analysis. In the economic dimension, 49% of students' fathers were unemployed, 22.5% of mothers were employed, and 21.1% did not have sufficient income to meet family needs. Among these, only paternal unemployment showed a statistically significant correlation with the level of student anxiety ($P = 0.049$). In terms of health, 2.8% of students reported physical problems, and 6.4% had mental health issues, both of which were significantly correlated with anxiety ($P = 0.043$ and $P = 0.001$ respectively). Regarding recent crises, 21.1% of participants experienced the death of a parent or close relative in the last six months, 5% had a sick family member, and 5.6% witnessed their parents' divorce. In terms of family vulnerability, 2.2% had a disabled family member, and 3.9% had a family member with addiction issues. In the dimension of family relationships, 5.3% of students did not reside with their parents, and 9.4% lacked familial intimacy, with only the latter showing a statistically significant correlation with anxiety ($P = 0.001$). Other personal and family characteristics included 7.8% of parents being illiterate, 2.2% of students being employed, 82.2% attending public schools, and 89.7% exhibiting signs of puberty, none of which showed significant correlation with students' anxiety.

In the next step, four variables that demonstrated a significant correlation with students' anxiety in univariate analysis—namely, father's employment status, physical and mental illnesses, and intimacy between family members—were subjected to logistic

regression analysis. The findings revealed that two variables, having a mental illness ($OR = 5.00$, $P = 0.04$) and lack of intimacy between family members ($OR = 9.95$, $P = 0.002$), maintained a significant correlation with students' anxiety (refer to Table 3).

5. Discussion

The results of the present study revealed that among 360 randomly sampled students aged between 13 to 15 years in Shiraz, 59.7% experienced varying levels of anxiety, with most reporting mild to moderate anxiety, and 13.1% exhibiting severe anxiety. The relative frequency of anxiety was 60.9% in girls and 56.6% in boys; however, this difference was not statistically significant.

In this context, Derakhshanpour et al. reported a 14.5% prevalence of anxiety disorders among 745 primary school children in Gorgan (13). Khaleghi et al. found that out of 2095 children and adolescents aged 6 to 18 years in urban areas of Tehran, the overall prevalence of psychiatric disorders was 28.2%, with anxiety disorders being the most common at 21.9% (14). Compared to other studies conducted in Iran, the prevalence of anxiety in this study appears to be higher. While factors such as differences in sample age, data collection tools and methods, and social and cultural variations among communities may contribute to this discrepancy, the main factor could be the coincidental data collection period during the COVID-19 pandemic, which has heightened anxiety among adolescents. In this study, no significant difference was observed in the prevalence of anxiety between boys and girls. However, Ahmadi et al. found a prevalence of 64.5% in girls and 44.7% in boys (15), while Sharifian et al. concluded that anxiety is more common in girls than boys (16).

To assess the economic situation, variables such as parents' employment and sufficient income to meet the family's needs were examined. Among these, only the variable of father's unemployment showed a significant

Table 2. Comparison of Individual and Family Characteristics in Adolescents with and Without Anxiety^a

Dimensions	No. (%)	Anxiety Status; No. (%)		P-Value
		Anxious	Normal	
Economic				
Father employment				0.049
Employed	311 (86.4)	180 (83.7)	131 (90.3)	
Unemployed	49 (13.6)	35 (16.3)	14 (9.7)	
Mother employment				0.057
Employed	81 (22.5)	55 (25.6)	26 (17.9)	
Unemployed	279 (77.5)	160 (74.4)	119 (82.1)	
Enough income				0.088
Yes	248 (78.9)	164 (76.3)	120 (82.8)	
No	76 (21.1)	51 (23.7)	25 (17.2)	
Student Health				
Physical illness				0.043
Yes	10 (2.8)	9 (4.2)	1 (0.7)	
No	350 (97.2)	206 (95.8)	144 (99.3)	
Mental illness				0.001
Yes	23 (6.4)	21 (9.8)	2 (1.4)	
No	337 (93.6)	194 (90.2)	143 (98.6)	
Crisis				
Death of a parent or close relative				0.290
Yes	76 (21.1)	48 (22.3)	28 (19.3)	
No	284 (78.9)	167 (77.7)	117 (80.7)	
Divorce of parents				0.403
Yes	20 (5.6)	13 (6.0)	7 (4.8)	
No	340 (94.4)	202 (94.0)	138 (95.2)	
Illness of a family members				0.085
Yes	18 (5.0)	14 (6.5)	4 (2.8)	
No	342 (95.0)	201 (93.5)	141 (97.2)	
Vulnerable Family				
Disabilities in a family member				0.412
Yes	8 (2.2)	4 (1.9)	4 (2.8)	
No	352 (97.8)	211 (98.1)	141 (97.2)	
Addiction in a family member				0.115
Yes	14 (3.9)	11 (5.1)	3 (2.1)	
No	346 (96.1)	204 (94.9)	142 (97.9)	
Relationships Between Family Members				
Lives with parents				0.294
Yes	341 (94.7)	202 (94.0)	139 (95.9)	
No	19 (5.3)	13 (6.0)	6 (4.1)	
Intimacy between family members				0.001
Yes	326 (90.6)	183 (85.1)	143 (98.6)	
No	34 (9.4)	32 (14.9)	2 (1.4)	
Other Personal and Family Characteristics				
Parents literacy				0.136
Literate	331 (92.2)	195 (90.7)	136 (94.4)	
Illiterate	28 (7.8)	20 (9.3)	8 (5.6)	
Employment student				0.307
Employed	8 (2.2)	6 (2.8)	2 (1.4)	
Unemployed	352 (97.8)	209 (97.2)	143 (98.6)	
Type of school				0.114
Public	296 (82.2)	172 (80.0)	124 (85.5)	
Private	64 (17.8)	43 (20.0)	21 (14.5)	
Puberty symptoms				0.284
Yes	323 (89.7)	195 (90.7)	128 (88.3)	
No	37 (10.3)	20 (9.3)	17 (11.7)	

^a Chi-square test.

correlation with anxiety. In line with this finding, Sharifian et al. investigated the prevalence of anxiety-

Table 3. Odds Ratio and Confidence Interval of the Main Factors of Adolescent Anxiety^a

Variables	OR	Lower	Upper	P-Value
Father employment	1.466	0.732	2.937	0.280
Intimacy between family members	9.956	2.316	42.793	0.002
Physical illness	2.937	0.325	26.532	0.337
Mental illness	5.003	1.106	22.637	0.037

^aLogistic regression

related disorders and epidemiological factors among first-grade middle school students in Bushehr (16). According to their results, economic poverty within the family emerged as a significant epidemiological factor contributing to anxiety, consistent with the findings of this study.

Furthermore, the results of the present study revealed a significant correlation between students' physical and mental health and anxiety. This outcome aligns with the findings of Lesinskiin et al., who observed a direct correlation between poor health and students' anxiety (17).

Moreover, regarding family crises within the past six months, none of the variables in this domain—such as family member illness, death, or parental divorce—showed a significant correlation with adolescent anxiety. However, Karimzadeh et al. suggested that parental health could serve as another predictor of children's mental health, while Lesinskiin et al. demonstrated a direct correlation between parental divorce and anxiety (17, 18). Additionally, the study's findings regarding the vulnerability of families indicated that neither of the investigated variables—the presence of a disabled or addicted family member—had a statistically significant correlation with adolescent anxiety. In contrast, Etemadi and Mastari Farahani indicated a significant difference in the mental health of female adolescents from addicted and non-addicted families (19).

In the dimension of relationships between family members, two variables were investigated: Living with parents and intimacy among family members. Among these, only intimacy between family members showed a statistically significant correlation with the level of anxiety. Students who experienced intimate relationships within their families displayed lower levels of anxiety compared to those who did not. In a study conducted by Bogels and Brechman-Toussaint, titled "Family Issues in Child Anxiety," it is suggested that various family factors such as marital conflict,

overall family functioning, and sibling relationships may contribute to anxiety (20).

According to the results of the present study, there was no significant correlation found between parents' level of education, type of school (public or private), puberty, and the presence of disability in family members with adolescent anxiety. In line with these findings, Sheikhamadi et al. did not observe a significant correlation between parents' education levels and adolescent anxiety (21). Similarly, Derakhshanpour et al. found no correlation between anxiety and the type of school attended (13). Additionally, in a study by Latifnejad et al., similar to the present study, no significant correlation was observed between puberty and students' anxiety levels (22).

In this study, among all the variables considered across various dimensions, adolescents who have mental illness and those who lack friendly relationships within their family members have the highest likelihood of experiencing anxiety compared to other participants.

5.1. Limitations

Given that this study was conducted during the widespread prevalence of the COVID-19 disease worldwide, including Iran, the potential impact of this disease on adolescent anxiety cannot be overlooked. It is recommended that similar studies be conducted in the future to further explore this issue.

5.2. Conclusions

In this study, the relative frequency of anxiety among adolescents was significant. Among the individual and family characteristics, mental illness and the lack of friendly relations between family members were the two most important factors. Therefore, identifying and addressing related factors, along with timely diagnosis and treatment of this disorder in childhood, should be prioritized by mental health officials.

Footnotes

Authors' Contribution: N.S. and M.E. and Z.Z. were designed the study; Z.Z. was collected the data. N.S. and Z.Z. were analyzed the data and interpreted the results; Z.Z. and N.S. wrote the main text of the manuscript; N.S. and M.E. reviewed the article.

Conflict of Interests: The authors declare no conflict of interest.

Data Availability: The datasets of the current study are available from the corresponding author on reasonable request.

Ethical Approval: The study protocol is approved by Shiraz University of Medical Sciences with research code (98-01-08-21520) and the Ethics Committee code (IR.SUMS.REC.1399.242).

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Informed Consent: All students who participated in this study and their parents signed the consent form.

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