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Prevalence and Risk Factors of Anxiety Among Secondary School Children in Diyala Province

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ABSTRACT

Background: Emotional disorders are common among adolescents and arise from interacting social, psychological, biological, familial, and environmental factors. Epidemiological data suggest that about 7.5% of Iraqi adolescents fulfil diagnostic criteria for anxiety disorders.

Aim of study: To assess the prevalence of anxiety symptoms among children aged 12-19 in Diyala province and to assess associated factors.

Subjects and Methods: A cross-sectional study with analytic components conducted in eleven intermediate and secondary schools in Diyala City during a period of six months (October/1/2025 – April/1/2026). It included 537 intermediate and secondary school students aged between 12 - 19 years. We used a SCARED scale of child anxiety which is a widely used tool for assessing anxiety. Data was collected by self-administered questionnaire including sociodemographic, clinical and school-related, and psychosocial and trauma characteristics.

Results: In this study, mean anxiety score was 29.75 ± 13.11, with a range of 0 to 76. Notably, a significant portion of the distribution lies above the clinical cutoff point of 25 with a prevalence of 66.1%. Generalized anxiety represents the most prevalent specific subtype at 62%. Seven factors remained significantly associated with child anxiety, these factors were exposure to bullying, family conflict or violence, difficulties in healthcare accessibility, insufficient family income, having chronic disease, female gender, and secondary educational level.

Conclusion: The prevalence of anxiety among school children in Diyala Province was high. The most common subtype was generalized anxiety, followed by social anxiety and panic/somatic symptoms. The independent associated factors of anxiety were female gender, exposure to bullying, family conflict or violence, difficult healthcare accessibility, insufficient family income, chronic disease, and secondary educational level..

KEYWORDS ***Safety;*** *Anxiety, mental health, adolescent, school, prevalence*

1-INTRODUCTION

Anxiety is a serious mental health problem, causing high morbidity around the world. Adolescent age is crucial for an individual's mental development and as such efforts must be focused on solving problems like stress, anxiety, and depression. Treating such conditions is not an easy task considering the multifaceted physical, mental and biological changes that an individual goes through during this period (1). Mental issues during this age are a major burden on the health system and particularly because of their importance in an individual's growth. If left untreated, psychiatric disorders might have an impact on the overall life of an individual ranging from poor grades in school to abuse of substances, and in extreme cases, even suicide becomes a possibility (2). The World Health Organization (WHO) estimates that a tiny portion of adolescents (with higher rates in older adolescents) suffer from anxiety disorders. Emotional disorders are particularly common among this age group and are influenced by a complicated combination of social, psychological, and biological factors. Many students during this time of rapid neurobiological change, identity formation, heavy academic and social demands, and high competition suffer from persistent worry, fear, irritability, concentration problems, sleep disturbances, and even physical symptoms like headaches, abdominal pain, and palpitations (3). Reduced grades, school refusal or absenteeism, reduced participation in extracurricular activities, strained family/peer relationships, and panic attacks are all symptoms of anxiety in the classroom. Other common manifestations of anxiety include social anxiety (fear of negative evaluation, avoidance of presentations/group work), generalized anxiety (excessive worry across multiple domains), panic attacks, and somatic complaints that lead to numerous visits to the clinic (4).

Instead of depending only on clinic-based care, school-wide prevention plus targeted supports should be considered, as cross-national data among school-going adolescents also show that anxiety is common across

countries and has modifiable correlates, such as health-risk behaviors and psychosocial stressors (5). Recent adolescent validation work supports GAD-7 (Generalized Anxiety Disorder-7) as a feasible screening/monitoring measure in educational contexts. It is essential to note that screening should be paired with clear referral pathways, confidentiality safeguards, and culturally appropriate interpretation in order to be useful for practical school and primary-care workflows to recognize students who might need further assessment (6).

The aim of this study is to assess the prevalence of anxiety symptoms among children and adolescents aged 12 to 19 years in Diyala Province. It also aims to identify the sociodemographic, environmental, and familial risk factors associated with anxiety in this age group. In addition, the study examines the effect of trauma exposure, parental mental health, and the school environment on anxiety levels.

2-SUJECTS AND METHODS

1.1. Study Design, Setting, and Data Collection Period

This was a cross-sectional study with analytic components conducted in eleven intermediate and secondary schools in Diyala City. Data collection was carried out over a six-month period, from October 1, 2025, to April 1, 2026.

1.2. Study Population and sampling

The study population included intermediate and secondary school students aged 12 to 19 years. The sample size was calculated using the equation $n = Z^2pq/d^2$, where n represents the required sample size, Z is the standard normal value at a 95% confidence level, equal to 1.96, p is the expected proportion, which was assumed to be 0.5 because it was unknown, q is equal to $1 - p$, and d represents the absolute precision, which was set at 0.05. Based on this calculation, the estimated minimum sample size was 384 students. However, a total of 537 respondents were included to compensate for possible non-response and to increase the statistical power of the study. The estimated sample size was proportionally distributed among the selected schools. Accordingly, the expected data collection time for each school was determined according to the number of students planned to be recruited from that school. Data collection was performed through daily school visits, with four hours spent per day and four days per week during the allocated period for each school.

A multi-stage sampling technique was used to select the study participants from schools within the Diyala General Directorate of Education. In the first stage, a convenience sampling technique was used to select eleven intermediate and secondary schools. In the second stage, one class from each educational stage in the selected schools was chosen using a simple random sampling technique. From each selected class, a random sample of 15 to 20 students was chosen until the target sample size was reached.

1.3. Data Collection Tools

Data were collected using a self-administered questionnaire that was given directly to the participants and collected after completion. The questionnaire included several sections covering sociodemographic, clinical, school-related, psychosocial, trauma-related, and anxiety-related characteristics.

The sociodemographic section included age, gender, birth order, educational grade, and place of residence. Residence was classified into rural and urban areas. Rural areas were defined as areas located outside city borders and not served by municipality services, whereas urban areas were defined as areas located inside city borders and served by municipality services. This section also included parental marital status, categorized as married, divorced, or widowed; parental occupation, categorized as employed, unemployed, housewife, retired, or deceased; and family monthly income, which was self-reported and classified as insufficient, sufficient, or good according to the estimated monthly income. Additional variables included housing type, classified as owned or rented/shared, displacement history, and healthcare accessibility, categorized as easy, medium, or difficult. The clinical and school-related section included information about the presence of chronic diseases, neurodevelopmental history, social inhibition or shyness, school refusal behavior, academic performance, exposure to bullying, quality of friendships, enjoyment of school, and teacher-reported behavioral concerns. Academic performance was classified as excellent, good, average, or weak.

The psychosocial and trauma-related section assessed parental psychiatric history, family conflict or violence, parenting style, recent loss of a family member, trauma exposure, long-term separation from parents or caregivers, and exposure to war or conflict events. Parenting style was classified as strict or overprotective, supportive or flexible, and neglectful. This section also assessed parents' knowledge about anxiety disorders, willingness to seek help when anxiety signs are present, and their perception of anxiety as part of normal development.

Anxiety symptoms were assessed using the Screen for Child Anxiety Related Emotional Disorders scale. The SCARED scale is a widely used screening tool for anxiety symptoms in children and adolescents. It consists of 41 items scored on a three-point scale: 0 for "No such problem," 1 for "Sometimes," and 2 for "Often." The scale evaluates anxiety symptoms across five domains: somatic or panic symptoms, generalized anxiety, separation anxiety, social phobia, and school phobia. The somatic or panic domain includes 13 items, generalized anxiety includes 9 items, separation anxiety includes 8 items, social phobia includes 7 items, and school phobia includes 4 items. The total score is calculated by summing all item scores, with higher scores indicating greater anxiety severity. A total score above 25 is considered the cut-off point for clinically significant anxiety symptoms.

1.4. Pilot Study

A pilot study was conducted among ten students in one of the selected schools before starting the main data collection. The purpose of the pilot study was to assess the clarity and applicability of the questionnaire, estimate the time required to complete it, and identify any difficulties that might be encountered during the study.

1.5. Statistical analysis

Statistical analyses were carried out using the Statistical Package for Social Sciences (SPSS) version 28. Continuous variables are presented as means ± standard deviations, medians with interquartile ranges, and categorical variables as percentages. The significance of the difference in different percentages (qualitative data) was tested using the Pearson Chi-square test (X2-test) with the application of Yates' correction or Fisher's Exact test whenever applicable. Binary logistic regression analysis was conducted for factors significantly associated with anxiety. A P-value of less than 0.05 was considered significant.

1.6. Ethical and official approvals

Ethical approval for this study was obtained before data collection from the local institutional review board at the College of Medicine, University of Diyala, under approval number 953 on 19 August 2025. Letter of facilitation was obtained from Diyala College of Medicine to Diyala General Directorate of Education and the schools concerned under approval number 53665 on 22th of September 2025. All students were verbally informed about the study, and they were asked permission to be part of the study. All personal information was kept anonymous. Data were exclusively used for the sake of this study

3-RESULTES

A total of 537 students aged 12 to 19 years were included in the study. The mean age was 14.09 ± 3.71 years. The largest age group was 15 to 17 years, accounting for 48.2% of participants. Females represented 50.8% of the sample, and 58.5% of students were enrolled in secondary school. Most students lived in urban areas (77.3%), had married parents (81.4%), and lived in owned houses (76.7%). Displacement history was reported by 11.4% of students, while difficult access to healthcare was reported by 11.9%.

Regarding clinical and school-related characteristics, 29.1% of students had chronic diseases and 5.0% had a neurodevelopmental history. Social inhibition or shyness was reported by 35.2%, while school refusal behavior was reported by 11.4%. Most students had average or weak academic performance (65.8%). Exposure to bullying was reported by 24.2% of students, whereas 77.7% reported having good friendships and 69.1% reported enjoying school. Psychosocial and trauma-related findings showed that 6.9% of students had a parental psychiatric history and 9.3% reported family conflict or violence. The most common parenting style was supportive or flexible (49.5%). Direct trauma exposure was reported by 26.1% of students, recent loss of a family member by 16.2%, long-term separation from parents or caregivers by 7.4%, and exposure to war or conflict events by 7.3%.

The mean SCARED score was 29.75 ± 13.11, with a range from 0 to 76. Based on a cut-off score above 25, 355 students were classified as having clinically significant anxiety symptoms, giving an overall prevalence of 66.1%. Generalized anxiety was the most frequent subtype (62.0%), followed by social anxiety (58.8%), panic or somatic symptoms (57.7%), separation anxiety (53.8%), and school avoidance (47.9%).

Table 1. Sociodemographic and economic characteristics of the study participants

Variable	Category	n	%
Age group	12 to 14 years	182	33.9
	15 to 17 years	259	48.2
	18 to 19 years	96	17.9
Gender	Male	264	49.2
	Female	273	50.8
Educational grade	Intermediate	223	41.5
	Secondary	314	58.5
Residence	Urban	415	77.3
	Rural	122	22.7
Parents' marital status	Married	437	81.4
	Divorced	55	10.2
	Widowed	45	8.4
Monthly family income	Insufficient	167	31.1
	Sufficient	192	35.8
	Good	178	33.1
Housing type	Owned	412	76.7
	Rented or shared	125	23.3
Displacement history	Yes	61	11.4
Healthcare accessibility	Easy	191	35.6
	Medium	282	52.5
	Difficult	64	11.9

Table 2. Clinical, school-related, psychosocial, and trauma-related characteristics

Variable	Category	n	%
Chronic disease	Yes	156	29.1
Neurodevelopmental history	Yes	27	5.0
Social inhibition or shyness	Yes	189	35.2
School refusal behavior	Yes	61	11.4
Academic performance	Excellent or good	184	34.3
	Average or weak	353	65.8
Exposure to bullying	Yes	130	24.2
Good friendships	Yes	417	77.7
Enjoyment of school	Yes	371	69.1
Teacher-reported behavioral concerns	Yes	52	9.7
Parental psychiatric history	Yes	37	6.9
Family conflict or violence	Yes	50	9.3
Parenting style	Strict or overprotective	158	29.4
	Supportive or flexible	266	49.5
	Neglectful	113	21.0
Recent loss of family member	Yes	87	16.2
Direct trauma exposure	Yes	140	26.1
Long-term separation from caregivers	Yes	40	7.4
Exposure to war or conflict events	Yes	39	7.3

Table 3. Anxiety prevalence and SCARED subtypes among students

Anxiety measure	n	%
Clinically significant anxiety symptoms	355	66.1
No clinically significant anxiety symptoms	182	33.9
Generalized anxiety	333	62.0
Social anxiety	316	58.8
Panic or somatic symptoms	310	57.7
Separation anxiety	289	53.8
School avoidance	257	47.9

In bivariate analysis, anxiety was significantly more frequent among females than males (74.7% vs. 57.2%, p = 0.001) and among secondary school students compared with intermediate school students (70.4% vs. 60.1%, p = 0.013). Significant associations were also observed with parental marital status, insufficient family income, displacement history, and difficult healthcare access. Clinical and school-related factors significantly associated with anxiety included chronic disease, social inhibition or shyness, average or weak academic performance, and exposure to bullying. Among psychosocial factors, parental psychiatric history, family conflict or violence, traumatic event exposure, and long-term separation from parents or caregivers were significantly associated with anxiety.

Table 4. Significant factors associated with anxiety in bivariate analysis

Variable	Category	Anxiety n/N	%	p-value
Gender	Male	151/264	57.2	0.001
	Female	204/273	74.7	
Educational grade	Intermediate	134/223	60.1	0.013
	Secondary	221/314	70.4	
Parents' marital status	Married	278/437	63.6	0.012
	Divorced	39/55	70.9	
	Widowed	38/45	84.4	
Monthly family income	Insufficient	135/167	80.8	<0.001
	Sufficient	120/192	62.5	
	Good	100/178	56.2	
Displacement history	Yes	52/61	85.2	0.002
	No	303/476	63.7	
Healthcare accessibility	Difficult	55/64	85.9	<0.001
	Medium	185/282	65.6	
	Easy	115/191	60.2	
Chronic disease	Yes	125/156	80.1	<0.001
	No	230/381	60.4	
Social inhibition or shyness	Yes	155/189	82.0	<0.001
	No	200/348	57.5	
Academic performance	Excellent or good	95/184	51.6	<0.001
	Average or weak	260/353	73.7	
Exposure to bullying	Yes	110/130	84.6	<0.001
	No	245/407	60.2	
Parental psychiatric history	Yes	32/37	86.5	0.008
	No or unknown	323/500	64.6	
Family conflict or violence	Yes	45/50	90.0	<0.001
	No	310/487	63.7	
Direct trauma exposure	Yes	110/140	78.6	0.001
	No	245/397	61.7	
Long-term separation from caregivers	Yes	35/40	87.5	0.003
	No	320/497	64.4	

In binary logistic regression analysis, seven factors remained independently associated with anxiety. The strongest predictor was exposure to bullying (AOR = 4.61, 95% CI: 2.49 to 7.12), followed by family conflict

or violence (AOR = 3.72, 95% CI: 2.01 to 5.63), difficult healthcare accessibility (AOR = 3.06, 95% CI: 1.68 to 6.17), insufficient family income (AOR = 2.94, 95% CI: 1.61 to 4.87), chronic disease (AOR = 2.49, 95% CI: 1.36 to 3.98), female gender (AOR = 1.76, 95% CI: 1.12 to 2.64), and secondary educational level (AOR = 1.47, 95% CI: 1.06 to 2.07).

Table 5. Independent predictors of anxiety in binary logistic regression analysis

Predictor	Category	AOR	95% CI	p-value
Exposure to bullying	Yes	4.61	2.49 to 7.12	0.001
Family conflict or violence	Yes	3.72	2.01 to 5.63	0.001
Healthcare accessibility	Difficult	3.06	1.68 to 6.17	0.010
Monthly family income	Insufficient	2.94	1.61 to 4.87	0.019
Chronic disease	Yes	2.49	1.36 to 3.98	0.022
Gender	Female	1.76	1.12 to 2.64	0.025
Educational grade	Secondary	1.47	1.06 to 2.07	0.031

AOR, adjusted odds ratio; CI, confidence interval.

4-DISCUSSION

Adolescence is a critical developmental period during which biological, psychological, academic, and social changes may increase vulnerability to anxiety and other emotional disorders. Anxiety during this stage can interfere with school performance, social functioning, and long-term mental health, which supports the need for early identification and school-based preventive strategies (7-10). The present study assessed anxiety symptoms and associated factors among 537 school students aged 12 to 19 years. The prevalence of clinically significant anxiety symptoms in this study was 66.1%, which is higher than several previously reported rates among adolescents. For example, Suhra et al. reported a prevalence of 21.4% (11), while Madasu et al. found that 22.7% of rural adolescents in Northern India had anxiety disorders using the SCARED tool (12). Similarly, Febida and Akshithanand reported a prevalence of 35.3% among adolescents in an urban area of Delhi (13), whereas Muthusamy et al. reported a rate of 51% among South Indian school-aged adolescents (14). The higher prevalence in the current study may be related to socioeconomic strain, family instability, displacement, trauma exposure, healthcare access difficulties, academic pressure, and differences in screening methods or sample characteristics. Female students had significantly higher anxiety than males, which is consistent with many previous studies. Madasu et al. reported higher anxiety among female adolescents compared with males (27.6% vs. 18.3%) (12), and Al-Yateem et al. found a similar pattern among adolescents in the UAE (33.6% vs. 17.2%) (15). Studies from China and other settings also reported higher anxiety among females (16,17). This gender difference may reflect hormonal changes during puberty, greater emotional sensitivity to interpersonal and academic stressors, sociocultural expectations, and a higher tendency among females to report internalizing symptoms. However, this pattern is not universal, as Nnubia and Emmanuel reported higher symptomatic anxiety among males than females in Nigerian adolescents (32.1% vs. 21.9%) (18), suggesting that cultural and social context may influence gender-related differences.

Anxiety was also significantly higher among secondary school students. This finding agrees with previous reports showing that anxiety may increase with higher educational stages and greater academic demands. Adhikari and Bhandari found variation in anxiety levels across school grades in Nepal (19), while Dong et al. reported anxiety symptoms among 41.4% of secondary school students, with school performance and limited family psychological support as important related factors (20). Reshu et al. also found that 48.0% of grade XII students had significant examination anxiety (21). These findings suggest that academic pressure, fear of failure, and future-related concerns may contribute to anxiety among students in higher school stages.

Family and economic factors were important in this study. Anxiety was higher among students with unstable parental marital status and insufficient family income. This is supported by previous studies showing that socioeconomic hardship and family instability are associated with poorer adolescent mental health. Madasu et al. found that lower-middle socioeconomic status was associated with anxiety among Indian adolescents (12), and Yang et al. reported that lower family socioeconomic status was linked to worse psychological well-being among Chinese adolescents (22). Kaltiala et al. also described socioeconomic disparities in anxiety and depression among Finnish adolescents (23), while Gaydosh and Harris reported that family instability during childhood was associated with poorer psychological and physiological outcomes in adulthood (24). Financial

stress and family disruption may reduce emotional security and increase chronic stress, thereby increasing vulnerability to anxiety.

Chronic disease was significantly associated with anxiety in the present study, with 80.1% of students with chronic diseases reporting anxiety. This finding is consistent with evidence that adolescents with chronic medical conditions have a higher risk of emotional disorders. Postigo-Zegarra et al. reported that adolescents with chronic medical conditions were more likely to have emotional distress (25). Dudeney et al. found that 34.6% of adolescents with chronic pain met diagnostic criteria for anxiety disorders, and 23.9% exceeded clinical anxiety cutoffs (26). Other studies reported anxiety symptoms in 16.1% of asthmatic adolescents (27), 23.3% of epileptic adolescents, and 21.6% of adolescents with allergies (28). The higher rate in the current study may reflect differences in disease burden, access to healthcare, family stress, illness-related fears, and treatment difficulties.

School-related factors also showed clear associations with anxiety. Excessive shyness or fear, average or weak academic performance, and exposure to bullying were significantly associated with anxiety. These findings are consistent with previous evidence linking anxiety to social inhibition, poor school functioning, and peer victimization. Burstein et al. reported that social phobia was present in 12.4% of shy adolescents and that shyness was common among U.S. adolescents (46.7% to 62.4%) (29). Mazzone et al. found that anxiety symptoms increased with educational stage, from 2.3% in primary school to 7.9% in secondary school and 15.9% in high school (30). Haile et al. reported that bullied adolescents had almost twice the prevalence of anxiety symptoms compared with non-bullied adolescents (29.8% vs. 14.5%) (31), and Bond et al. found that peer victimization increased the later risk of anxiety and depressive symptoms (32). These findings support the role of bullying, poor academic functioning, and social fear as important school-based contributors to adolescent anxiety.

The present study also found significant associations between anxiety and parental psychiatric history, family conflict or violence, traumatic event exposure, and long-term separation from caregivers. These results are consistent with previous research showing that parental psychopathology and adverse family environments increase the risk of anxiety among children and adolescents. Narmandakh et al. found that parental depression and anxiety predicted adolescent anxiety (33), while Khanal et al. reported that parental psychological disorders increased the risk of anxiety disorders in children (34). McTavish et al. showed that exposure to adult relational violence was linked to several adverse outcomes, including anxiety (35), and Morelli et al. found that daily family conflict was associated with internalizing problems among children (36). Slone and Shoshani also reported that exposure to political and war-related violence was associated with worse mental health symptoms among adolescents, while parental warmth had a protective effect (37). These findings suggest that anxiety may arise through the combined effects of genetic vulnerability, insecure attachment, chronic stress, family violence, caregiver separation, and trauma exposure. Some factors, including general parenting style, parental knowledge about mental health disorders, and willingness to seek help, were not significantly associated with anxiety in this study. These findings differ from previous work showing that parenting strategies, parental warmth, war-related parenting stress, and parental mental health literacy may affect child emotional outcomes and help-seeking behavior (37-40). The lack of significant associations in the current study may be due to differences in measurement methods, exposure timing, trauma severity, parental reporting accuracy, or the use of broad categorical variables that may not fully capture actual caregiving behavior or emotional support. In multivariable logistic regression, seven factors remained independently associated with anxiety. The strongest predictor was exposure to bullying (AOR: 4.61, 95% CI: 2.49 to 7.12), followed by family conflict or violence (AOR: 3.72, 95% CI: 2.01 to 5.63), difficult healthcare accessibility (AOR: 3.06, 95% CI: 1.68 to 5.27), insufficient family income (AOR: 2.94, 95% CI: 1.61 to 4.87), chronic disease (AOR: 2.46, 95% CI: 1.36 to 3.98), female gender (AOR: 1.76, 95% CI: 1.12 to 2.64), and secondary educational level (AOR: 1.47, 95% CI: 1.06 to 2.17). These findings indicate that adolescent anxiety is multifactorial, with peer victimization, family conflict, economic disadvantage, healthcare barriers, chronic illness, female gender, and higher educational stage acting as key contributors.

Overall, the findings of this study indicate that anxiety is highly prevalent among school children in Diyala Province, with generalized anxiety being the most common subtype, followed by social anxiety and panic or somatic symptoms. Anxiety was independently associated with female gender, bullying exposure, family conflict or violence, poor healthcare accessibility, insufficient family income, chronic disease, and secondary school level. Among these factors, bullying showed the strongest association, followed by family conflict or violence and limited access to healthcare. These results highlight the need for early identification of vulnerable students and the implementation of school-based mental health screening using validated tools such as the

SCARED scale. Preventive strategies should also include strict anti-bullying policies, awareness programs, and stronger collaboration between schools and healthcare services to improve access to mental health support for adolescents.

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