



Prevalence of Anxiety among Secondary School Students in Jos, Plateau state, Nigeria

Duwap Milepdwak Makput

Federal University of Health Sciences, Azare, Bauchi state, Nigeria.

Federal University of Health Sciences Teaching Hospital, Azare, Bauchi State, Nigeria

DOI: <https://doi.org/10.68050/JAMS.2026.577>

Received: 21 Sept 2026; Accepted: 22 Sept 2026; Published: 23 September 2026

ABSTRACT

Background: Anxiety is a psychological disorder that usually affects adolescents' and adults' social and academic functioning. This study determined the pattern of anxiety among secondary school students in Jos, Nigeria.

Materials and Methods: A descriptive cross-sectional study was conducted among 151 secondary school students aged 10 -19 years in Jos, Nigeria. They were chosen with the multistage sampling method and screened for anxiety with generalized anxiety disorder-7 according to the Diagnostic and Statistical Manual of Mental Disorders, 5th Edition.

Results: The prevalence of anxiety in this study was 33.7% and about half of the early adolescents (10–13 years) had anxiety while about a quarter of middle adolescents (14–16 years) had anxiety. Anxiety was statistically significantly higher among early adolescents than middle and late adolescents ($\chi^2 = 14.205$, $P = 0.013$). More than half (53.1%) of the females had anxiety while a little above a quarter of the males had anxiety. The prevalence of anxiety was statistically significantly higher in females than males ($\chi^2 = 9.782$, $P = 0.001$).

Almost all adolescents with single parents had anxiety while only about a third of those whose parents were married had anxiety. The prevalence of anxiety was statistically significantly higher among adolescents with single parents ($\chi^2 = 34.546$, $P = 0.001$).

Conclusion: The prevalence of anxiety is high among school adolescents, more in female adolescents as well as those with single parents.

Keywords: Adolescents, anxiety, prevalence, secondary school, Jos.

INTRODUCTION

Anxiety is one of the most common psychological illnesses in adolescents and adults.[1-4] Epidemiological studies reported age 11 years as the median age of occurrence of anxiety symptoms. It is evident that anxiety symptoms can severely affect youth's social and academic functioning.[5-7] It can also co-exist with other psychological disorders like depression,[8] and may strongly affect adaptation in many areas of life such as academic ability and social interaction.[6] Anxiety symptoms are characterised by worries, nervousness and oversensitivity.[7] Adolescents are young people aged 14-19 years in their formative years and there is rapid maturity of morals, values and attitudes with great influence on their behaviour and psychology in this stage.[8] Globally, the behaviours of adolescents and their transition to adulthood are based upon the social setting in which they develop and dwell.[9,10] Adolescents constitute about 20% (1.2 billion) of the global population and over three-quarters of developing world.[11]



Adolescent level of maturation and social status is not compatible to some challenges unless they have well-provided backing, knowledge and access to resources.[12,13] Adolescents are more predisposed to a lot of risk which can adversely affect their mental state and make them prone to anxiety.[13] Risks implicated in promoting anxiety in adolescence involve the urge for greater autonomy, sexual identity, pressure from peers and access to technology use.[14] Family problems as strict parenting and bullying are known risks for anxiety.[15]

Psychological illness leads to social withdrawal, isolation, loneliness and anxiety and can profoundly affect areas such as school attendance and schoolwork.[16] Adolescents with anxiety feel unable to discuss their problems with others and family and consequently leave their challenges unidentified or misunderstood by friends and family which may lead to anxiety.[17] Adolescents' anxiety is usually undetected by the families and society, and under diagnosed by medical personnel.[18] Anxiety is so cumbersome to evaluate among adolescents because of the psychological and hormonal fluctuations that are usually associated with this period.[19,20]

MATERIALS AND METHODS

Study design

It was a descriptive study

The study was conducted in secondary schools among adolescents aged 10–19 years in Jos, Nigeria. The list of all public and private secondary schools in Jos city was obtained from the state ministry of education. Five schools were selected through a ballot. After obtaining the sample size, and considering the population of the five selected schools (2 public and 3 private based on the proportion i.e the private schools are more than public schools). Each selected school was allocated a certain number of respondents based on the population of the school. In each school, from among the students who agreed to participate, the sample were selected through a ballot. Generalised anxiety disorder-7 (GAD-7) was utilised to screen adolescents for anxiety according to the Diagnostic and Statistical Manual of Mental Disorders, 5th Edition.[21]

Ethical consideration

Approval from Ministry of Education, Principals, parents and students were obtained.

Inclusion criteria

All students aged 10–19 years who assented and had the consent of their parents/(guardians).

Exclusion criteria

Students below 10 and those above 19 years were excluded. Those with non-consenting parent(s)/guardian(s) and those who refused to participate were excluded.

Sampling

Sample was calculated using Cochran's formula:

$$n = \frac{Z^2 \cdot p(1-p)}{e^2}$$

Where n: The calculated sample size.

Z = The Z-score (confidence level, usually 1.96 for a 95% confidence level)

p = The estimated proportion of an attribute in the population, expressed as a decimal (commonly set to 0.5 for maximum variability).

e = The margin of error (precision), expressed as a decimal (e.g., 0.05 for $\pm 5\%$).

The sample was calculated and rounded up to 151 after making adjustments for possible drop outs.

Five schools in Jos were selected by Simple Random Sampling as a first stage. Students were chosen with proportional sampling from each school according to size of the school.

Procedure

A socio demographic questionnaire designed by the researcher and Generalised anxiety disorder GAD-7 questionnaire which is an already validated tool in Nigeria were used to collect data. GAD-7 assesses anxiety symptoms and is easy to use, economical, readily available, universal and easy to analyse.

It is a seven- item questionnaire with a 4-point Likert scale. ‘Not at all’ score 0. Several days score 1, more than half the days , score 2, ‘Nearly every day’, score 3. Total maximum score is 21. A score of 0 to 4 is no anxiety, a score of 5 to 9 is mild anxiety, 10 to 14 is moderate and 15 to 21 is severe anxiety. Evidence from a previous study showed that the GAD-7 had a specificity of 98.9%, a sensitivity of 89.5% and negative and positive predictive values of 0.981 and 0.875, respectively.[17-19]. Information was obtained from the students in English. The questionnaires were pre-tested before administration by the researchers and trained assistants.

Data analysis

The data was analysed with Statistical Package for the Social Sciences (SPSS) version 23, using inferential and descriptive statistics. Descriptive statistics such as frequency, percentage, mean, standard deviation were used to describe the distribution and aggregate data of the study. The test of associations between the outcome variable and categorical variables was done with Chi-square and $P < 0.05$ was taking as the level of significance.

Characteristic	Number (%)	
Gender		
Male	82	54.3
Female	69	45.7
Age (years)		
10–13	21	13.9
14–16	60	39.7
17–19	70	46.3
Religion		
Christianity	128	84.7
Islam	23	15.3
Others	—	—
Class		
JSS 1–3 (Junior Secondary)	85	56.2
SS 1–3 (Senior Secondary)	66	43.7
Parents' marital status		
Married	126	83.4
Single	4	2.6
Divorced	6	3.9



Widow(ed)	5	3.3
Separated	10	6.6
Family type		
Monogamous	136	90
Polygamous	15	9.9

RESULTS

There were more males (54.3%) than females among the respondent. The late adolescents (age group 17-19years constituted 46.3 % of the sample. An overwhelming majority (84.7%) of the adolescents were Christians while others were Muslims (table 1)

Majority (83.4%) of the parents of the adolescents were married. About 51 of the adolescents had anxiety (table 2). The overall prevalence of anxiety in this study is 33.7%.

About half (43.7%) of the adolescents from ages 10–13 years had anxiety. Anxiety was statistically significant among early adolescents than in other adolescent groups ($\chi^2 = 8.672$, $P = 0.013$). The prevalence of anxiety was statistically significantly higher in females than males ($\chi^2 = 9.782$, $P = 0.001$).

All (100%) of adolescents with single parents had anxiety, which was statistically significant, ($\chi^2 = 34.546$, $P = 0.001$) anxiety was least among children whose parents were married

Table 1: Socio-demographic characteristics of the students.

Table 2: Prevalence of anxiety among secondary school adolescents.

Variable	Frequency	Percent (%)
Anxious	51	33.7
Not-Anxious	100	66.3
Total	151	100

Table 3: Association between socio-demographic characteristics of anxious and non-anxious school adolescents

Characteristics	Anxious n (%)	Non-anxious n (%)	Total (N)	χ^2	P
Age (years)					
10–13	10 (47.6)	11 (52.3)	21	8.672	0.013
14–16	15 (25.0)	45 (75.0)	60		
17–19	21 (30.0)	49 (70.0)	70		
Sex					
Male	16 (26.6)	66 (80.4)	82	9.782	0.001
Female	54 (53.6)	32 (46.3)	69	—	—
Parents' Marital Status					
Single	4 (100.0)	0 (0.0)	4	34.546	0.001
Married	32 (25.3)	94 (74.6)	126		
Divorced	3 (60.0)	2 (40.0)	5		
Widowed	5 (83.3)	1 (16.7)	6		
Separated	7 (70.0)	3 (30.0)	10		



Family Type					
Monogamous	39 (25.8)	97 (64.2)	136		
Polygamous	12 (7.9)	3 (1.9)	15		

DISCUSSION

This research was done to determine anxiety prevalence and pattern of anxiety among school adolescents in Jos, Plateau State, Nigeria. The prevalence of 33.7% was found in the study which was comparable to 37.4% reported by Neil and Christensen in Nairobi.[23] It was also similar to the 36.2% prevalence found by Reynolds and Richmond in 2015 who used GAD-7 among school adolescents.[24] and the results of Costello et al. in 2006 [1] and 33.3% found by Higa-McMillan et al. in 2009 Egypt.[3]

The result of this study differs from the studies done in India by Rapee et al. in 2009,[4] Jones in South Africa in 2013,[5] Adewuya et al. in Nigeria in 2007[25] and Kessler et al. in Norway in 2005[6] which found comparatively lower prevalence of 23.0%, 26.3%, 15% and 16.4% respectively.

This observation may be due to variations in the tools/instruments. The prevalence of 18% reported by Merikangas et al. in 2004 in the United States of America among 863 young adolescents aged 11–15 years was also not in agreement with this study.[7] The difference in the study by Merikanga' et al. and this study may be due to the variation in ages of the participants.

The reasons for the observed differences in prevalence may be due to differences in methodologies, sampling methods, study designs, screening tools (instruments), age of subjects and sampling frames.[2]

This study also found that early adolescents were more anxious than the late adolescents who were anxious. Contrary results were found by Duchesne et al. in 2010 among Turkish adolescents where older adolescents were reported to have more anxiety than younger adolescents.[11] This could be from societal expectations from early adolescents such as better conduct and better academic performance are likely to could also be a result of poor self-identity and inability to cope with the rapid physiologic and psychological change in this early adolescent's state. This could be because of the increase in the challenges they face in this early stage, societal expectations and academic pressures from parents could be overwhelming.[10]

Hormonal changes have also been linked to increase anxiety in early adolescents and this has been associated with anxiety among the early adolescents.[19] Hormonal changes also produce neural and behavioural signs of anxiety by stimulating the brain to lead to anxiety.[19] Although, this is not in agreement with studies from Bangladesh., Nairobi, India and China.[2,3,9,10]

This study also reported more female than male adolescents with anxiety which is in keeping with studies done in Nigeria by Adewuya et al.[25] and outside countries such as Nairobi, Brazil and China in which anxiety was reported to be significantly more common among female adolescents.[12,13,18,19]

Moderate anxiety was more prevalence in the study which was in consonance with the study one in India and Malaysia by Neill et al and Reynold et al respectively.[23,24] Severity of Adolescents' anxiety with anxiety was statistically significantly higher in younger and male adolescents which were also in agreement with other studies.[15,16]

CONCLUSION

There is a high prevalence of anxiety among the school adolescents in Jos especially among the female adolescents as well as those with single parents. Schools health staff should be trained in the basics of mental healthcare for prompt identification of at risk children and referral to specialist for further evaluation .



Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

REFERENCES

1. Costello EJ, Foley DL, Angold A. 10-year research update review: The epidemiology of child and adolescent psychiatric disorders: Developmental epidemiology. *J Am Acad Child Adolesc Psychiatry* 2006;45:8-25.
2. Costello EJ, Egger HL, Copeland W, Erkanli A, Angold A. The developmental epidemiology of anxiety disorders: Phenomenology, prevalence, and comorbidity. In: Silverman WK, Field AP, editors. *Anxiety Disorders in Children and Adolescents*. 2nd ed. New York, NY: Cambridge University Press; 2011. p. 56-75.
3. Higa-McMillan CK, Francis SE, Chorpita BF. Anxiety disorders. In: Mash EJ, Barkley RA, editors. *Child Psychopathology*. 3rd ed. New York: Guilford Press; 2014. p. 345-428.
4. Rapee RM, Schniering CA, Hudson JL. Anxiety disorders during childhood and adolescence: Origins and treatment. *Annu Rev Clin Psychol* 2009;5:311-41.
5. Jones PB. Adult mental health disorders and their age at onset. *Br J Psychiatry Suppl* 2013;54:s5-10.
6. Kessler RC, Berglund P, Demler O, Jin R, Merikangas KR, Walters EE. Lifetime prevalence and age-of-onset distributions of DSM-IV disorders in the National Comorbidity Survey Replication. *Arch Gen Psychia*
7. Kessler RC, Berglund P, Demler O, Jin R, Merikangas KR, Walters EE. Lifetime prevalence and age-of-onset distributions of DSM-IV disorders in the National Comorbidity Survey Replication. *Arch Gen Psychiatry* 2005;62:593-602.
8. Merikangas KR, He JP, Burstein M, Swanson SA, Avenevoli S, Cui L, et al. Lifetime prevalence of mental disorders in U.S. Adolescents: Results from the National Comorbidity Survey Replication – Adolescent supplement (NCS-A). *J Am Acad Child Adolesc Psychiatry* 2010;49:980-9
9. Chu BC, Merson RA, Zandberg LJ, Margaret A. Calibrating for comorbidity: Clinical decision-making in youth depression and anxiety. *Cogn Behav Pract* 2012;19:5-16.
10. Duchesne S, Vitaro F, Larose S, Tremblay RE. Trajectories of anxiety during elementary-school years and the prediction of high school non completion. *J Youth Adolesc* 2008;37:1134-46.
11. Duchesne S, Ratelle CF, Poitras SC, Drouin É. Early adolescent attachment to parents, emotional functioning and worries about the middle school transition. *J Early Adolesc* 2009;29:743-66.
12. Duchesne S, Larose S, Vitaro F, Tremblay RE. Trajectories of anxiety in a population sample of children: Clarifying the role of children's behavioral characteristics and maternal parenting. *Dev Psychopathol* 2010;22:361-73.
13. Duchesne S, Ratelle CF, Roy A. Worries about the middle school transition and subsequent adjustment: The role of classroom goal structure. *J Early Adolesc* 2012;32:681-710.
14. Duchesne S, Ratelle CF, Feng B. Developmental trajectories of achievement goal orientations during the middle school transition: The contribution of emotional and behavioral dispositions. *J Early Adolesc* 2014;34:485-516.
15. Atkins MS, Hoagwood KE, Kutash K, Seidman E. Toward the integration of education and mental health in schools. *Adm Policy Ment Health* 2010;37:40-7.
16. Bosquet M, Egeland B. The development and maintenance of anxiety symptoms from infancy through adolescence in a longitudinal sample. *Dev Psychopathol* 2006;18:517-50.
17. Crocetti E, Klimstra T, Keijsers L, Hale WW 3rd, Meeus W. Anxiety trajectories and identity development in adolescence: A five-wave longitudinal study. *J Youth Adolesc* 2009;38:839-49.
18. Fisak BJ Jr., Richard D, Mann A. The prevention of child and adolescent anxiety: A meta-analytic review. *Prev Sci* 2011;12:255-68.



19. Grills-Taquechel AE, Norton P, Ollendick TH. A longitudinal examination of factors predicting anxiety during the transition to middle school. *Anxiety Stress Coping* 2010;23:493-513.
20. Gullone E, King NJ, Ollendick TH. Self-reported anxiety in children and adolescents: A three-year follow-up study. *J Genet Psychol* 2001;162:5-19.
21. James AC, James G, Cowdrey FA, Soler A, Choke A. Cognitive behavioural therapy for anxiety disorders in children and adolescents. *Cochrane Database of Systematic Reviews*, 2013; 6 DOI: HYPERLINK "[http:// dx.doi.org/10.1002/14651858.CD004690.pub3](http://dx.doi.org/10.1002/14651858.CD004690.pub3)"10.1002/14651858. CD004690.
22. Kingery JN, Erdley CA, Marshall KC, Whitaker KG, Reuter TR. Peer experiences of anxious and socially withdrawn youth: An integrative review of the developmental and clinical literature. *Clin Child FamPsychol Rev* 2010;13:91-128.
23. Oyediji GA. Socio-economic and cultural background of hospitalized adolescents in Ilesa, Nigerian. *J Paediatr* 1985;12:111-7.
24. Neil AL, Christensen H. Efficacy and effectiveness of school-based prevention and early intervention programs for anxiety. *Clin Psychol Rev* 2009;29:208-15.
25. Reynolds CR, Richmond BO. What I think and feel: A revised measure of children's manifest anxiety. *J Abnorm Child Psychol* 1997;25:15-20.
26. Adewuya AO, Ola BA, Adewumi TA. The 12-month prevalence of DSM-IV anxiety disorders among Nigerian secondary school adolescents aged 13-18 years. *J Adolesc* 2007;30:1071-6