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Prevalence And Severity Of Depression, Anxiety And Stress Among School-Going Adolescents: A Cross-Sectional Study Using Dass-21

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ABSTRACT

Depression, anxiety and stress are increasingly recognized as major mental health concerns among adolescents. Early identification is essential because untreated psychological distress can adversely affect academic performance, relationships and long-term well-being. Aim of the study was to determine the prevalence and severity of depression, anxiety and stress among school-going adolescents in Khammam District and to assess the correlations among these psychological domains. A school-based analytical cross-sectional study was conducted among 400 adolescents aged 13–16 years selected from four government and private schools through multistage random sampling. Sociodemographic information was collected using a pretested questionnaire. Depression, anxiety and stress were assessed using the Depression Anxiety Stress Scale-21. Data were analysed using descriptive statistics and Pearson's correlation coefficient. A p-value below 0.05 was considered statistically significant. The mean age of the participants was 14.37 ± 1.10 years, and 59.75% were male. The prevalence of depression, anxiety and stress was 30.75%, 26.00% and 29.00%, respectively. Mild symptoms were the most common abnormal severity category. Depression showed strong positive correlations with anxiety ($r=0.788$) and stress ($r=0.757$), while anxiety was strongly correlated with stress ($r=0.714$); all correlations were statistically significant ($p<0.001$). Psychological distress was common among school-going adolescents. Regular school-based screening, counselling and timely referral are recommended.

INTRODUCTION

Adolescence, defined by the World Health Organization (WHO) as the age between 10 and 19 years, is a critical developmental phase characterized by rapid physical growth, emotional maturation, cognitive development, and social transitions. During this period, adolescents experience significant biological and psychosocial changes that increase their susceptibility to mental health disorders. Globally, nearly one in every six individuals is an adolescent, making this age group an important target for public health interventions. Mental health disorders account for approximately 16% of the global burden of disease among adolescents, with depression, anxiety, and stress being the most frequently encountered psychological problems. These disorders adversely affect academic achievement, interpersonal relationships, self-esteem, and overall quality of life and are associated with an increased risk of substance abuse, self-harm, and suicide if left unidentified and untreated^[1-2].

Depression is characterized by persistent sadness, diminished interest in daily activities, feelings of hopelessness, impaired concentration, and reduced functional ability. Anxiety disorders are marked by excessive fear, worry, autonomic arousal, and avoidance behaviours that interfere with normal functioning, whereas stress reflects an individual's inability to effectively cope with environmental demands and challenges. These three psychological conditions frequently coexist and share common biological, environmental, and psychosocial determinants. Academic competition, peer pressure, parental expectations, social media exposure, family conflicts, bullying, and socioeconomic inequalities have emerged as important contributors to emotional distress among adolescents. The COVID-19 pandemic further amplified these stressors by disrupting schooling, limiting social interactions, and increasing uncertainty regarding educational and career prospects, resulting in a noticeable increase in psychological morbidity among school-going children worldwide^[1-4].

The Depression Anxiety Stress Scale-21 (DASS-21) has become one of the most widely accepted screening instruments for assessing emotional distress among adolescents because of its good reliability, validity, ease of administration, and ability to simultaneously evaluate depression, anxiety, and stress. Several recent studies have utilized DASS-21 among school-going adolescents and have reported substantial variability in prevalence estimates across different geographical regions. A cross-sectional study from West Bengal reported prevalence rates of depression, anxiety, and stress as 52.3%, 47.4%, and 33.7%, respectively (5). Similarly, studies conducted in South India and Nepal demonstrated considerable psychological morbidity

among adolescents, emphasizing that mental health problems remain highly prevalent across diverse educational settings^[2,6]. Other Indian studies have consistently shown that female students, older adolescents, family-related stressors, poor academic performance, and adverse social circumstances are significantly associated with increased psychological distress^[5,7-8].

Despite growing recognition of adolescent mental health as a public health priority, evidence from many districts of India remains limited. Most available Indian studies have been conducted either in metropolitan cities, single institutions, or specific demographic groups, limiting the generalizability of their findings. Furthermore, regional variations in educational systems, socioeconomic background, family environment, and school characteristics may substantially influence the prevalence and severity of depression, anxiety, and stress. Data from Telangana, particularly Khammam district, are scarce, and there is limited information regarding the emotional well-being of adolescents studying in both government and private schools using standardized screening tools. This existing research gap highlights the need for region-specific epidemiological data to guide school-based mental health screening, early identification, and preventive interventions^[5,7-10].

Considering the limited region-specific evidence regarding the comparative burden of psychological distress among different categories of school-going adolescents in Telangana, the present study was undertaken to compare the levels of depression, anxiety, and stress among adolescents studying in different educational settings. Specifically, the study aimed to compare depression, anxiety, and stress between students of government and private schools as well as between residential and day scholars. In addition, the study sought to identify demographic and school-related factors associated with depression, anxiety, and stress among adolescents. The findings are expected to provide valuable evidence for planning targeted school-based mental health promotion programmes, facilitating early identification of vulnerable groups, and supporting policymakers and educational authorities in developing effective interventions to improve adolescent mental health outcomes.

MATERIALS AND METHODS

A school-based analytical cross-sectional study was conducted among adolescents studying in selected government and private high schools in Khammam District, Telangana. The study was carried out over 18 months, from 1 January 2019 to 30 June 2020. Of the 41 eligible schools in Khammam, four schools, comprising two government and two private schools, were selected through simple random sampling. The

study population consisted of school-going adolescents aged 13–16 years studying in Classes VII to X.

Sample Size and Sampling Technique: The sample size was estimated using an expected prevalence of depression, anxiety and stress of 20%, based on an earlier study, with a 95% confidence level and relative precision of 20% of the expected prevalence. Using the formula for possible incomplete responses, the final sample size was rounded to 400 students. A multistage random sampling technique was adopted. Four schools were initially selected by simple random sampling, following which 100 students were selected from each school. Students from Classes VII to X were included proportionately and selected using simple random sampling.

Inclusion Criteria:

- School-going adolescents aged 13–16 years.
- Students enrolled in Classes VII to X in the selected schools.
- Students who were present on the day of data collection.
- Students whose parents or guardians provided written informed consent.
- Students who provided assent to participate in the study.

Exclusion Criteria:

- Students absent on the scheduled days of data collection.
- Students whose parents or guardians did not provide consent.
- Students who did not provide assent.
- Adolescents with known concurrent medical illnesses, psychiatric disorders or disabilities that could interfere with participation or assessment.

Study Tool: Data were collected using a pretested, semi-structured questionnaire and the Depression Anxiety Stress Scale-21 (DASS-21). The semi-structured questionnaire recorded relevant sociodemographic characteristics of the participants. The DASS-21 is a self-report instrument consisting of 21 items divided equally into three subscales, with seven items each assessing depression, anxiety and stress.

The depression subscale evaluates dysphoria, hopelessness, self-deprecation, loss of interest, anhedonia and inertia. The anxiety subscale assesses autonomic arousal, skeletal muscle symptoms, situational anxiety and subjective anxious affect, whereas the stress subscale evaluates difficulty relaxing, nervous arousal, irritability, agitation, over-reactivity and impatience. Each item is rated on a

four-point scale ranging from 0 to 3. Scores for the seven items in each subscale were summed and multiplied by two to obtain the final depression, anxiety and stress scores.

Severity was classified using the recommended DASS-21 cut-offs. Depression scores were categorized as normal (0–9), mild (10–13), moderate (14–20), severe (21–27) and extremely severe (≥ 28). Anxiety scores were classified as normal (0–7), mild (8–9), moderate (10–14), severe (15–19) and extremely severe (≥ 20). Stress scores were categorized as normal (0–14), mild (15–18), moderate (19–25), severe (26–33) and extremely severe (≥ 34).

Data Collection:

- Approval was obtained from the Institutional Ethics Committee of Mamata Medical College and General Hospital, Khammam, before commencement of the study.
- Administrative permission was obtained from the District Educational Officer, Khammam, and the heads of the selected schools.
- The purpose and procedure of the study were explained to the school authorities, parents and participating students.
- The age of each participant was verified from the official school records.
- Written informed consent was obtained from the parents or guardians, and assent was obtained from the participating adolescents.
- Data collection was completed in two sessions. During the first session, students completed the pretested, semi-structured questionnaire containing sociodemographic information.
- During the second session, the DASS-21 questionnaire was administered to assess symptoms of depression, anxiety and stress.
- Each participant was assessed individually, and approximately 15–30 minutes were required to complete the data collection procedure.

Statistical Analysis: Data were entered into Microsoft Excel 2013 and analysed using IBM SPSS Statistics version 23. Categorical variables were summarized as frequencies and percentages, while continuous variables were presented as mean and standard deviation. The prevalence and severity of depression, anxiety and stress were calculated according to the DASS-21 cut-off scores. Pearson's correlation coefficient was used to assess the relationship among depression, anxiety and stress scores. Associations between categorical variables were examined using the chi-square test. A p-value of less than 0.05 was considered statistically significant.

RESULTS

The study included 400 school-going adolescents aged 13–16 years. The mean age of the participants was 14.37 ± 1.10 years. The largest proportion of students was aged 13 years (30.0%), followed by 15 years (27.75%), 14 years (22.75%) and 16 years (19.5%). Males constituted 59.75% of the study population, while females accounted for 40.25%, giving a male-to-female ratio of approximately 1.48:1.

Depressive symptoms were identified in 123 of the 400 participants, giving an overall prevalence of 30.75%. The remaining 277 students (69.25%) had DASS-21 depression scores within the normal range. Thus, approximately three out of every ten adolescents screened positive for some degree of depressive symptoms.

Anxiety symptoms were present in 104 students, resulting in an overall prevalence of 26.0%. Nearly three-fourths of the participants, 296 students (74.0%), had anxiety scores within the normal range. These findings indicate that approximately one in every four school-going adolescents experienced some degree of anxiety.

Stress symptoms were identified in 116 participants, corresponding to an overall prevalence of 29.0%. The remaining 284 students (71.0%) had stress scores within the normal range. Therefore, nearly three in every ten adolescents reported mild to extremely severe symptoms of stress. Among the participants, 69.25% had depression scores within the normal range. Mild depression was observed in 15.75%, while 11.75% had moderate depression. Severe and extremely severe depressive symptoms were found in 2.75% and 0.50% of students, respectively. Mild depression was therefore the most frequently observed severity category among students who screened positive. Anxiety scores were within the normal range in 74.0% of the adolescents. Mild anxiety was found in 12.0%, followed by moderate anxiety in 7.5%. Severe and extremely severe anxiety were observed in 3.75% and 2.25% of the participants, respectively. Although mild anxiety was the most common abnormal category, 6.0% of the total sample experienced severe or extremely severe anxiety.

Stress scores were normal in 71.0% of the participants. Mild stress was observed in 15.25%, while 10.5% had moderate stress. Severe and extremely severe stress were present in 2.75% and 0.50% of students, respectively. Mild stress represented the largest abnormal severity category, whereas severe-to-extremely severe stress affected 3.25% of the total study population.

Pearson's correlation coefficient; all correlations were statistically significant at $p < 0.001$. A strong and statistically significant positive correlation was

Prevalence of Anxiety Among School-going Adolescents (N = 400)

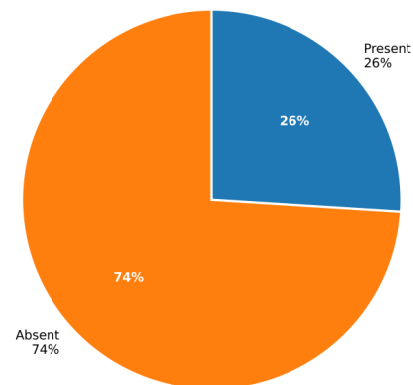


Figure 1: Prevalence of anxiety among school-going adolescents (N = 400)

Prevalence of Stress Among School-going Adolescents (N = 400)

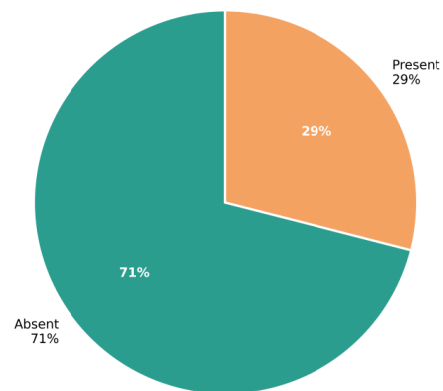


Figure 2: Prevalence of stress among school-going adolescents (N = 400)

observed among all three DASS-21 domains. Depression showed the strongest correlation with anxiety ($r = 0.788$, $p < 0.001$), followed by its correlation with stress ($r = 0.757$, $p < 0.001$). Anxiety and stress were also strongly correlated ($r = 0.714$, $p < 0.001$). These findings indicate that students with higher symptoms in one psychological domain were likely to report higher symptoms in the other domains.

DISCUSSION

The present school-based cross-sectional study assessed depression, anxiety and stress among 400 adolescents aged 13–16 years in Khammam District using the DASS-21. The mean age of the participants was 14.37 ± 1.10 years, and males constituted 59.75% of the sample. The prevalence of depression, anxiety and stress was 30.75%, 26.00% and 29.00%, respectively. These findings indicate that a

Table 1. Demographic profile of the study participants (N = 400)

Demographic variable	Category	Frequency (n)	Percentage
Age	13 years	120	30.00
	14 years	91	22.75
	15 years	111	27.75
	16 years	78	19.50
Gender	Male	239	59.75
	Female	161	40.25

Mean age: 14.37 ± 1.10 years

Table 2. Prevalence of depression among school-going adolescents (N = 400)

Depression status	Frequency	Percentage
Present	123	30.75
Absent	277	69.25
Total	400	100.00

Table 5. Severity distribution of depression according to DASS-21 scores (N = 400)

Severity of depression	DASS-21 score	Frequency (n)	Percentage
Normal	0–9	277	69.25
Mild	10–13	63	15.75
Moderate	14–20	47	11.75
Severe	21–27	11	2.75
Extremely severe	≥ 28	2	0.50
Total		400	100.00

Table 6. Severity distribution of anxiety according to DASS-21 scores (N = 400)

Severity of anxiety	DASS-21 score	Frequency (n)	Percentage
Normal	0–7	296	74.00
Mild	8–9	48	12.00
Moderate	10–14	30	7.50
Severe	15–19	15	3.75
Extremely severe	≥ 20	9	2.25
Total		400	100.00

Table 7. Severity distribution of stress according to DASS-21 scores (N = 400)

Severity of stress	DASS-21 score	Frequency	Percentage
Normal	0–14	284	71.00
Mild	15–18	61	15.25
Moderate	19–25	42	10.50
Severe	26–33	11	2.75
Extremely severe	≥ 34	2	0.50
Total		400	100.00

Table 8. Correlation between depression, anxiety and stress scores among school-going adolescents (N = 400)

Variables	Depression	Anxiety	Stress
Depression	1.000	0.788	0.757
Anxiety	0.788	1.000	0.714
Stress	0.757	0.714	1.000

considerable proportion of apparently healthy school-going adolescents experienced psychological distress, with approximately one in three students reporting depressive or stress symptoms and one in four reporting anxiety symptoms.

The overall burden observed in the present study is consistent with recent evidence demonstrating that emotional and behavioural problems are common among children and adolescents. An umbrella review published in 2022 reported a substantial global burden of depression, anxiety, stress-related disorders, sleep problems and suicidal behaviour among children and adolescents. It also identified age, gender, educational factors, family relationships, socioeconomic circumstances, sedentary behaviour, internet use and

social support as important correlates of adolescent mental health^[11]. Although that review largely included studies conducted during the COVID-19 period, it reinforces the need to consider psychological distress among adolescents as a major public-health concern rather than an isolated clinical problem.

The prevalence of depression in the present study was 30.75%, which was higher than the 22.2% reported by Saikia et al. among school-going adolescents in Kamrup Metropolitan District, Assam^[12]. However, the prevalence of anxiety in the present study, 26.0%, was close to the 24.4% reported in their study. A marked difference was observed for stress: the current prevalence of 29.0% was substantially higher than the 6.9% reported in Assam. Differences in educational

environment, academic competition, family expectations, socioeconomic characteristics, age composition and interpretation of the DASS-21 items may explain this variation. The Assam study included students aged 14–17 years from ten schools, whereas the present investigation included younger adolescents aged 13–16 years from four selected schools.

In relation to severity, mild symptoms were the most frequent abnormal category for depression and stress. Mild depression was present in 15.75% of students, followed by moderate depression in 11.75%, whereas severe and extremely severe depression together affected 3.25%. Similarly, mild stress was found in 15.25%, moderate stress in 10.50%, and severe-to-extremely severe stress in 3.25%. For anxiety, 12.0% had mild symptoms and 7.5% had moderate symptoms, while severe and extremely severe anxiety together occurred in 6.0%. These distributions suggest that most affected adolescents were in the early or intermediate stages of psychological distress. This is an important opportunity for school-based screening and counselling because mild symptoms may progress, interfere with academic performance or coexist with other emotional problems when left unrecognized.

A 2024 study from Mysuru, South India, demonstrated considerable geographic variation in adolescent mental health. Depression ranged from 24.2% among urban adolescents to 39.3% among rural adolescents, while anxiety was reported in approximately half of both groups. Stress prevalence was 14.6% in urban and 16.6% in rural participants. The depression prevalence in Khammam falls between the urban and rural Mysuru estimates, whereas anxiety was considerably lower and stress was higher. Such variability may arise from differences in sampling methods, school type, sociocultural setting, age distribution and exposure to academic or family-related pressures. The Mysuru study additionally identified family income, parenting practices, academic pressure and self-esteem as significant correlates, supporting the multifactorial nature of adolescent psychological distress.

The present study demonstrated strong positive correlations between all three DASS-21 domains. Depression correlated most strongly with anxiety ($r = 0.788$), followed by stress ($r = 0.757$), while anxiety and stress were also strongly correlated ($r = 0.714$); all relationships were statistically significant at $p < 0.001$. These findings suggest that the three emotional states frequently coexist and may share common psychosocial or behavioural pathways. Recent analysis of DASS-21 responses among Chinese students similarly confirmed a stable three-factor structure with strong interrelationships and symptom clustering among depression, anxiety and stress. Thus,

adolescents identified with one form of psychological distress should be evaluated comprehensively for the other two domains rather than being assessed for a single condition alone.

The findings should be interpreted considering certain limitations. The cross-sectional design cannot establish temporal or causal relationships. DASS-21 is a screening instrument and does not provide a clinical psychiatric diagnosis. Self-reported responses may also be affected by recall and social-desirability bias. Furthermore, the study was limited to four schools in one district, which may restrict generalizability. Nevertheless, random sampling, an adequate sample size and the simultaneous assessment of three major psychological domains strengthen the findings.

CONCLUSION

Depression, anxiety and stress were common among school-going adolescents in Khammam District, affecting 30.75%, 26.0% and 29.0% of participants, respectively. Most affected students had mild or moderate symptoms; however, a smaller clinically important group experienced severe or extremely severe distress. The strong correlations among the three domains indicate substantial coexistence of emotional symptoms. Periodic school-based screening using standardized tools, teacher sensitization, confidential counselling services, parental awareness and timely referral of students with severe symptoms are recommended. Longitudinal and multicentric studies are required to identify causal factors and evaluate the effectiveness of school mental-health interventions.

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