Original Article

Prevalence and correlates of depression, anxiety, and stress among adolescents in urban and rural areas of Mysuru, South India

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Abstract

Background: Adolescence, a volatile period of growth between the ages of 10 and 19, is associated with increased vulnerability to mental health problems. Factors such as academic pressure can contribute to these challenges. **Objectives:** The current study aimed to evaluate the factors and prevalence of depression, anxiety, and stress among adolescents in the urban and rural areas of Mysuru district. **Materials and Methods:** A cross-sectional study was conducted in private high schools in both urban and rural regions. Prior permission and informed consent were obtained from participants and their legal guardians aged 18 years and older. **Results:** The gender distribution in urban areas was 60.2% female and 39.8% male, while in rural areas, it was 51% male and 49% female. The prevalence of depression was higher in rural (39.3%) than in urban areas (24.2%), while anxiety was more prevalent in urban (50.6%) than in rural areas (49%). Stress was also more common in rural (16.6%) than urban adolescents (14.6%). Factors significantly associated with mental health outcomes included monthly family income, parenting practices, academic pressures, and self-esteem. Key needs identified were mobile mental health applications, online counseling services, and access to school counselors. **Conclusion:** This study provides insights into the prevalence and correlates of common mental health issues among adolescents in this region of South India. The findings emphasize the necessity of providing mobile applications and offline counseling services to effectively support and meet the needs of adolescents in these settings.

Keywords: Adolescent mental health, anxiety, depression, needs assessment, stress

Introduction

Adolescence is a critical developmental period characterized by significant physical, physiological, and psychological changes as individuals undergo transition from childhood to adulthood. This phase, typically from the ages of 10 to 19 years, is marked by heightened vulnerability and susceptibility to mental health problems. In India, where adolescents comprise more than 21% of the population, addressing their mental health needs is crucial, considering their potential impact on the country's future demographic and economic landscape.[1]

Studies have highlighted the prevalence of mental health morbidity among adolescents, with a meta-analysis reporting that 6.5% of the community and 23.3% of the school sample experienced significant mental health issues.[2] Unfortunately,

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adolescent mental health has historically received inadequate attention from Indian policymakers. However, in recent years, there has been growing recognition of the importance of addressing mental health concerns during this pivotal phase.[2]

The physiological stress and psychological changes accompanying adolescence can influence future disease development and set trajectories for lifestyle and risk factors.[3] Therefore, timely intervention during this period holds immense potential for improving long-term health outcomes.[3] Academic pressure, among other factors, has been identified as a significant contributor to mental health issues among students.[4] Early identification and intervention are crucial to addressing these challenges effectively.

Mental health often remains a component of broader programs, and specific implementation factors such as duration of mental illness, provider selection, distance to healthcare clinics, and ease of accessibility for adolescents must be addressed.[1]

The present study aimed to add to this knowledge gap by examining the prevalence and factors associated with common mental health issues among adolescents in urban and rural areas of Mysuru district, South India. We hypothesized that academic pressures, parental dynamics, and socioeconomic characteristics would emerge as contributors. By shedding light on adolescents' unique mental health needs in underserved Indian communities, study findings can guide youth screening and integrated care models in primary care to facilitate early access to services.

By exploring the unique challenges adolescents face in this region, this study can contribute to developing targeted interventions and support services for this vulnerable population.

Materials and Methods

It is a cross-sectional study design. The study was conducted in private high schools in the urban and rural areas of the Mysuru district. The sample size was calculated using the prevalence *P* of 9.3% in a study done by Satyanarayana PT *et al.*[5] with an absolute precision of 5% and CI of 95%; a sample size of 205 was calculated for the study. Permission was obtained from the head of the schools (Principals), and informed consent was taken from adolescents above 18 years before starting the data collection. Adolescents who have given their consent and are willing to participate are included in the study. Ethical approval for this study was obtained from the Institutional Ethics Committee (IEC) of JSS Medical College prior to beginning data collection (Reference number: JSSMC/IEC/18.02.2022/19NCT/2021-22).

The selection of adolescents from the school has been made using simple random sampling. A simple random sampling method selected two high schools from urban (Sarawasthipuram, Mysuru) and rural (Gundlupet, Mysuru district) areas.

Data collection

Data was collected through face-to-face interviews by trained investigators using pre-validated tools. The tools included a sociodemographic proforma to capture details on participants' age, gender, and socioeconomic parameters, the 21-item Depression Anxiety and Stress Scale (DASS-21), and additional study-specific questionnaires.

The DASS-21 contains three 7-item self-report subscales assessing the severity of core symptoms of depression, anxiety, and stress. Respondents rate the extent to which statements applied over the past week on a four-point Likert scale ranging from 0 (did not apply to me at all) to 3 (applied to me very much or most of the time). The summed score categorizes individuals into normal, mild, moderate, severe, or extremely severe categories separately for each condition. Previous research has validated the DASS-21 among Indian adolescents, demonstrating good psychometric properties such as high internal consistency and convergent validity with other mental health scales.[6]

Additional data was gathered through structured questionnaires administered by the interviewers enquiring about various parental factors (arguments, punishment, strictness, illnesses, substance use), academic pressures (exam stress, bullying, failures, punishments, parental academic expectations), and personal attributes (self-esteem, appearance concerns, decision-making abilities). Data were entered in (Microsoft Corporation, USA) 2019 and analyzed using SPSS version 25 (IBM Corp, USA).

Results

Results were collected and analyzed from 205 subjects in both urban and rural areas of the Mysuru district. Study participants were selected from eighth- to first-year degrees in urban and rural areas. The study participant's ages range from 12 to 21, with a mean age of 15.69 ± 2.207.

60.2% of the participants are females in urban areas when compared to males 39.8%. Similarly, in rural areas, the ratio of males is 51% and female participants are 49%.

Most participants are Hindus in urban and rural areas (96.1% and 99%). The nuclear family tops the list (68.9%) compared to the others in urban Mysuru. Similarly, in rural areas, most participants had nuclear families (78.4%).

The majority of the participants (68.4%) in urban Mysuru belonged to social class I (monthly income of Rs 7008 and above), and very few belonged to social classes IV and V (Rs 1051-2101 and 1050 and below). Similarly, in rural Mysuru, 57.8% of participants belonged to social class I (57.8%).

Parental factors

Results from Table 1 show adolescents' parental factors in the urban and rural areas of Mysuru district.

Table 1: Assessment of different factors among adolescents in urban and rural areas

	Urban		Rural	
	n	%	*n*	%
Academic factors				
Do you feel any stress during exams				
Yes	65	63.10%	43	42.20%
No	38	36.90%	59	57.80%
Have you experienced bullying at any time on school premises				
Yes	16	15.50%	8	7.80%
No	87	84.50%	94	92.20%
Have you ever failed your examinations in the last year				
Yes	7	6.80%	14	13.70%
No	96	93.20%	88	86.30%
Do you keep getting punished at school for any reason				
Yes	41	39.80%	26	25.50%
No	62	60.20%	76	74.50%
Are you getting any pressure from your parents				
Yes	31	30.10%	43	42.20%
No	72	69.90%	59	57.80%
Are you participating in any extracurricular activities				
Yes	85	82.50%	79	77.50%
No	17	16.50%	23	22.50%
21	1	1.00%	0	0.00%
Are you participating in any sports in school				
Yes	82	79.60%	79	77.50%
No	21	20.40%	23	22.50%
Parental factors				
Do your parents frequently argue during disagreements				
Yes	39	37.90%	26	25.50%
No	64	62.10%	76	74.50%
Do you get punished at home frequently				
Yes	44	42.70%	22	21.60%
No	59	57.30%	80	78.40%
Are your parents strict				
Yes	56	54.40%	50	49.00%
No	47	45.60%	52	51.00%
Does any of your family members suffer from a severe illness				
Yes	20	19.40%	12	11.80%
No	83	80.60%	90	88.20%
Alcohol consumption by any family member				
Yes	31	30.10%	18	17.60%
No	72	69.90%	84	82.40%
Personal factors				
Lack of self-confidence or low esteem in you				
Yes	43	41.70%	46	45.10%
No	60	58.30%	56	54.90%
Do you feel any difficulty while making tough decisions				
Yes	49	47.60%	40.00	39.60%
No	54	52.40%	62.00	60.40%
Are you an alcoholic/smoker				
Yes	0	0.00%	1	1.00%
No	103	100.00%	101	99.00%
Are you worried about your physical appearance				
Yes	29	28.20%	13	12.70%
No	74	71.80%	89	87.30%

Values are expressed as frequency and percentage

Most participants disagreed with their parents' arguments in homes in both urban and rural areas. However, very few agreed with the same (urban = 37.9%, rural = 25.5%).

42.7% of participants in the urban area agreed that they are frequently punished at home, while only 21.6% of participants from the rural area agreed that they are frequently punished at home.

Most of the participants in the urban areas (54.4%) mentioned that their parents were strict compared to the rural areas, where only 49% agreed.

In the urban area, 19.4% of the participants stated that one of their family members suffered from a serious illness; similarly, in the urban area, participants stated only 11.8%.

Alcohol consumption by the participants' family members was higher in urban areas (30.1%) than in rural areas (17.6%).

Academic factors

Most urban (63.1%) and rural (42.2%) participants experienced stress during examinations. Very few participants experienced bullying on their school or college premises. Only 6.8% of the urban and 13.7% of the rural participants failed their examinations last year. 39.8% of the participants from urban areas stated that they were punished at school, but only 25.5% of the rural participants did so. Most participants from urban and rural areas participated in extracurricular activities and sports at school [Table 1].

Personal factors

41.7% of the participants from urban areas said they felt low esteem and lacked self-confidence; in rural areas, 45.1% mentioned the same. Participants felt difficulty making tough decisions in urban (47.6%) and rural (39.6%) areas.

28.2% of the participants from urban areas stated they are worried about their physical appearance compared to 12.7% of those from rural areas [Table 1].

Prevalence of depression, anxiety, and stress among adolescents in urban and rural areas

The reported prevalence of depression among adolescents from urban and rural areas of the Mysuru district is mild depression 12.6, moderate depression 9.7%, and severe depression 1.9%. In rural areas, the prevalence is 6.9% mild depression, 22.5% moderate depression, 5.9% severe depression, and 1% extremely severe depression.

The reported prevalence of anxiety among adolescents from urban Mysuru is 14.6% mild anxiety, 24.3% moderate anxiety, 3.9% severe, and 7.8% extremely severe anxiety. In rural areas, the prevalence is 7.8% for mild anxiety, 21.6% for moderate anxiety, 10.8% for severe anxiety, and 8.8% for highly severe anxiety.

The prevalence of stress among the adolescents from urban Mysuru is 8.7% have mild stress, 4.9% moderate stress, and 1% severe stress. Similarly, in a rural area, 12.7% are in mild stress, and 3.9% are in moderate stress.

Table 2: Prevalence of depression, anxiety, and stress among the study participants

Prevalence	Urban		Rural	
	n	%	*n*	%
Depression Stage				
Normal	78	75.70%	62	60.80%
Mild	13	12.60%	7	6.90%
Moderate	10	9.70%	26	25.50%
Severe	2	1.90%	6	5.90%
Extremely Severe	0	0.00%	1	1.00%
Anxiety Stage				
Normal	51	49.50%	52	51.00%
Mild	15	14.60%	8	7.80%
Moderate	25	24.30%	22	21.60%
Severe	4	3.90%	11	10.80%
Extremely Severe	8	7.80%	9	8.80%
Stress Stage				
Normal	88	85.40%	85	83.30%
Mild	9	8.70%	13	12.70%
Moderate	5	4.90%	4	3.90%
Severe	1	1.00%	0	0.00%
Extremely Severe	0	0.00%	0	0.00%

Values are expressed as frequency and percentage

The prevalence of depression was higher in rural areas (39.3%) than in urban Mysuru (24.2%). Anxiety is more prevalent in urban Mysuru (50.6%) than in rural Mysuru (49%). Similarly, stress prevalence was higher in rural Mysuru (16.6%) when compared to urban (14.6%) [Table 2].

Factors associated with depression, anxiety, and stress

The data's normality has been checked using the Shapiro–Wilk test, and the results show that the data are non-normally distributed.

The Chi-square test checks the association between sociodemographic variables and various domains of depression, anxiety, and stress.

Factors associated with depression

Various factors that are shown to be associated with depression are the monthly income of the head of the family, locality, parent argument, strictness of parents towards their children, bullying at school premises, failure of examination last year, getting punished at school, and pressure from parents regarding performance. All the factors showed significant association with a *P*-value less than 0.05 [Table 3].

Factors associated with anxiety

Various factors associated with anxiety are the monthly income of the head of the family, parent arguments, alcohol consumption, bullying at school premises, getting punished at school, lack of

self-confidence, and difficulty in making tough decisions. All the factors showed significant association with a *P*-value less than 0.05 [Table 4].

Factors associated with stress

Various factors associated with stress are the monthly income of the head of the family, alcohol consumption, bullying on school premises, and lack of self-confidence. All the factors showed significant association with a *P*-value less than 0.05 [Table 5].

Needs of adolescents in urban and rural areas

The majority of the participants in the urban areas need mobile applications (42.7%)>online counseling services (32%)>Online forums to share and discuss problems (32%)>Information, education, and communication (IEC) materials for mental health (22.30%)>School counselor (19.40%).

Participants in the rural areas quoted the following needs: Mobile application for mental health services (45.10%)>Online counseling services (37.30%)>Online forum to share and discuss problems (32%)>IEC materials for mental health (22.30%)>School counselor (19.40%) [Figure 1]. In terms of needs, both urban and rural youth identified mobile mental health applications, online counseling services, and access to school counselors as important resources.

Discussion

The present study examined the prevalence and factors associated

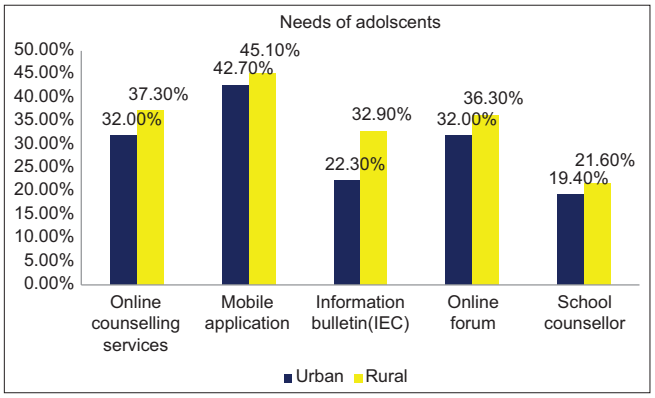

Figure 1: Mental health needs required by the study participants

Table 3: Factors associated with depression among the study participants

Factors associated with Depression				
Domains	**Variables**	**Chi-square value**	**df**	***P***
Sociodemographic factors	Monthly income of the head of the family (in rupees)	41.428	16	0.001
	Locality	13.735	4	0.008
Parental factors	Do your parents frequently argue during disagreements	13.067	4	0.011
	Are your parents strict	18.789	4	0.001
Academic factors	Have you experienced bullying at any time on school premises	16.575	4	0.002
	Have you ever failed your examinations in the last year	26.016	4	0.002
	Do you keep getting punished at school for any reason	23.312	4	0.001
	Are you getting any pressure from your parents	16.737	4	0.002

Values are expressed as Chi-square values and degree of freedom; *P*<0.05 is considered statistically significant

Table 4: Factors associated with anxiety among the study participants

Factors associated with anxiety				
Domains	**Variables**	**Chi-square value**	**df**	***P***
Sociodemographic factors	Monthly income of the head of the family (in rupees)	28.505	16	0.027*
Parental factors	Do your parents frequently argue during disagreements	23.390	4	0.002*
	Alcohol consumption by any family member	17.112	4	0.002*
Academic factors	Have you experienced bullying at any time on school premises	12.382	4	0.015*,
	Do you keep getting punished at school for any reason	14.539	4	0.006*
Personal factors	Lack of self-confidence or low esteem in you	17.284	4	0.002*
	Do you feel any difficulty while making tough decisions	9.537	4	0.049*

Values are expressed as Chi-square values and degree of freedom; *P*<0.05 is considered statistically significant; * Indicates Statistical Significance

Table 5: Factors associated with stress among the study participants

Factors associated with stress				
Domains	**Variables**	**Chi-square value**	**df**	***P***
Sociodemographic factors	Monthly income of the head of the family (in rupees)	28.505	16	0.027*
Parental factors	Alcohol consumption by any family member	10.524	3	0.015*
Academic factors	Have you experienced bullying at any time on school premises	9.988	3	0.019*
Personal factors	Lack of self-confidence or low esteem in you	9.019	3	0.029*

Values are expressed as Chi-square values and degree of freedom; *P*<0.05 is considered statistically significant ; * Indicates Statistical Significance

with depression, anxiety, and stress among adolescents in both urban and rural areas of the Mysuru district. The findings provide valuable insights into the mental health challenges faced by adolescents in these settings. By comparing these results with existing studies, a comprehensive understanding of the topic can be achieved.

Demographic characteristics revealed that most participants in both urban and rural areas were Hindus and belonged to nuclear families. This finding is consistent with previous research that emphasizes the influence of cultural and social factors on mental health outcomes.[7] The predominance of nuclear families suggests the need to investigate further the potential impact of family structure on adolescent mental health.

Regarding parental factors, the study found that disagreements between adolescents and their parents were relatively infrequent in urban and rural areas, indicating a harmonious family environment. However, a noteworthy proportion of participants in the urban areas reported frequent punishment at home, stricter parenting styles, and family members suffering from serious illnesses. These factors have been associated with increased adolescent psychological distress.[8,9] Additionally, the higher rates of alcohol consumption by family members in urban areas may contribute to a more stressful family environment.

Examining academic factors, the study revealed that a significant proportion of participants experienced stress during exams, while bullying was reported to be less prevalent. These findings align with previous studies highlighting the impact of academic pressure and bullying on adolescent mental health.[10,11] The higher rate of exam failures in rural areas may reflect the influence of educational disparities between urban and rural settings on mental health outcomes.

Personal factors such as low self-esteem, difficulty making tough decisions, and physical appearance concerns were prevalent in urban and rural areas. These factors are consistent with the challenges commonly faced by adolescents worldwide, emphasizing the importance of addressing self-esteem and body image concerns to promote mental well-being.[12,13]

The prevalence of depression, anxiety, and stress varied between urban and rural areas. The study found higher rates of depression in the rural population, while anxiety was more prevalent in urban areas. These findings resonate with previous studies highlighting the impact of environmental and socioeconomic factors on mental health outcomes.[14,15] The higher prevalence of stress in rural areas may be attributed to limited access to resources, lower socioeconomic status, and the influence of agricultural or rural-specific stressors.[16]

The factors associated with depression, anxiety, and stress identified in this study align with previous research, highlighting the role of socioeconomic factors, parental dynamics, academic pressure, and personal attributes.[15,17,18] Understanding these factors is crucial for developing targeted interventions and support services for adolescents.

The study also identified the specific needs of adolescents in urban and rural areas. Mobile applications for mental health services, online counseling, and forums for discussing problems were identified as significant needs in both settings. These findings align with the growing recognition of the potential of digital platforms to provide accessible mental health support for adolescents.[19,20] The need for school counselors and informative materials on mental health further emphasizes the importance of integrating mental health services within educational settings. As first-contact care providers, primary care doctors can leverage longitudinal doctor-patient relationships to promote mental health dialog, screening, and stigma reduction among adolescents.[21] Integrating routine evidence-based tools like the Patient Health Questionnaire for Adolescents (PHQ-A) into standard visits would enable the assessment of common issues like anxiety and mood disorders. Coupled with adaptations like embedding mental health professionals within practices, access to teleconsultations, and digital self-care, robust youth-centered models can facilitate early intervention to mitigate the long-term impacts of untreated conditions.[22,23]

Limitations

This study has certain limitations that should be considered when interpreting the findings. The single district design and sampling from school settings limits the generalizability of prevalence estimates and factors identified to the broader adolescent population in South India. The cross-sectional nature provides only a snapshot of self-reported symptoms, and no clinical diagnostic data were collected. Reliance on self-report questionnaires means findings may be prone to recall errors and response bias. Additional limitations include the lack of data on adolescents.

Future directions

Longitudinal studies are needed to elucidate trajectories and causal relationships between identified factors and mental health outcomes over time. Intervention studies testing approaches to promote adolescent mental health and resilience can help establish effective strategies. Overall, the current study provides initial insights that can inform larger-scale, longitudinal, and intervention research to advance understanding of adolescent mental health in South India.

Conclusion

This study provides valuable insights into the prevalence and factors associated with depression, anxiety, and stress among adolescents in urban and rural South India. Findings can guide efforts to promote youth mental health and resilience in these communities. Addressing modifiable factors like academic pressures and parenting practices through targeted interventions may help reduce the burden of mental health issues among adolescents in this region.

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Conflicts of interest

There are no conflicts of interest.

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