

# Assessment of the Prevalence of Depression, Anxiety and Stress Among School Going Adolescent Females

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## Abstract:

**Background:** Adolescent population is the major demographic and economic force of a nation. According to WHO, one in seven 10-19 years old girls experiences a mental disorder for which depression, anxiety and behavioral disorders are the leading causes, cumulatively accounting for 14% of the global burden of disease in this age group.

**Materials and Methods:** In this cross-sectional study, 365 adolescent girls studying in a government school in Pune city Maharashtra, were interviewed with the help of a pre validated, pretested depression anxiety and stress scale-21 tool including correlated factors to assess the magnitude of depression, anxiety, and stress and its stressors.

**Results:** The prevalence of depression, anxiety, and stress among these students was 48.8%, 55.6%, and 49.6%, respectively. Most of students suffered from moderate type of depression, anxiety and stress (49.4%, 47.7%, 36.4%) respectively. DAS was more common in mid adolescence having nuclear family with less than 6 hours of sleep, mild physical activity and annual family income of Rs 50000 to Rs 1 lac.

**Conclusion:** These findings indicate that prevalence of depression, anxiety and stress among adolescent girls is increasing on alarming rate and needs strong counter measures from respective administrative departments.

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## I. Introduction

According to the World Health Organization (WHO), depression is the leading cause of illness and disability among adolescents, with around 10-20% of adolescents experiencing mental health issues globally. In India, a developing country, the prevalence of depression, anxiety, and stress among adolescent girls is an alarming concern<sup>[1]</sup>. Adolescent mental health issues have become a significant public health concern in India<sup>[2]</sup>. India has the highest number of adolescents globally, with around 253 million aged between 10-19 years. According to a study conducted by the National Mental Health Survey (NMHS) in 2016, the prevalence of depression among adolescents aged 13-17 years was 4.4%, and the prevalence of anxiety was 3.6%<sup>[3]</sup>. Moreover, the prevalence of mental health issues was found to be higher among girls than boys, with girls having a higher prevalence of depression (5.7%) and anxiety (4.9%) than boys (3.1% and 3.0%, respectively).

Depression, anxiety, and stress are common mental health issues that affect individuals of all ages<sup>[4]</sup>. However, the prevalence of these mental health conditions is significantly high among adolescents, especially adolescent girls. Girls face various challenges during their teenage years, including hormonal changes, peer pressure, and academic stress. Additionally, girls in India face unique cultural and societal pressures, such as gender inequality, early marriage, and limited access to education and healthcare. Therefore, it is essential to study the prevalence of depression, anxiety, and stress among adolescent girls in India to develop effective interventions to improve their mental health outcomes<sup>[4,5]</sup>. It is a crucial stage in an individual's life, marked by physical, emotional, and social changes, making them vulnerable to various mental health issues. Therefore, this study aims to investigate the prevalence of depression, anxiety, and stress among adolescent girls in Pune, Maharashtra, India<sup>[6]</sup>.

Pune, the largest city in Maharashtra, has a population of around 6 million, with approximately 22% of the population comprising adolescents. It has a diverse population, with people from various ethnic and socio-economic backgrounds<sup>[7,8]</sup>. The city is also home to several educational institutions and has a rapidly growing IT sector. Therefore, it is important to understand the mental health needs of adolescent girls in Pune, as they are an integral part of the city's social and economic fabric. However, there is limited research on the prevalence of mental health issues among adolescents in Pune, especially among adolescent girls. Furthermore, the social, economic, and cultural factors may impact the prevalence of mental health issues among adolescent girls. Therefore, this study aims to fill this gap in research by investigating the prevalence of depression, anxiety, and stress among adolescent girls in Pune, Maharashtra, India.

**Objective:**

- 1.To estimate the prevalence of depression, anxiety, and stress among adolescent girls in Pune, Maharashtra, India.
- 2.To study association between the socio-cultural factors and depression, anxiety, and stress among adolescent girls in Pune, Maharashtra, India.
- 3.To analyze the impact of socio-cultural factors on the prevalence of depression, anxiety, and stress among adolescent girls in Pune, Maharashtra, India.

**II. Material And Methods**

**Study area-**The study was conducted in More Vidyalaya School Pune

**Study population-** All eligible female students of More Vidyalaya, Katraj from 8<sup>th</sup> to 10<sup>th</sup> standard who can understand and volunteer for the interview were included in the study.

**Study design-** Observational, Cross-sectional study

**Study size-** Considering 51.3%<sup>[4]</sup> prevalence of depression with 95% confidence level and with allowable error 10% of the expected prevalence; estimated minimum sample size was 356.

**Study period-**The study period was of 2 months (October-December)

**Study population** –There are total 15 wards in Pune. The present study covered purposively the Pune municipal corporation school (More Vidyalaya) from Dhankawadi ward

**Inclusion-** All female children from class 8<sup>th</sup> to 10<sup>th</sup> standard of More corporation school whose parents had given consent

**Exclusion-** Those students who were absent on the day of data collection

**Ethical consideration-** Institutional Ethics Committee Approval was obtained, before beginning the study. Study procedure was explained to the participants and informed consent from their parents was taken from them.

**Data collection-** pre-designed, pilot tested, validated semi-structured questionnaire was used for data collection. Data collection tool was prepared using Google form. The proforma is as follows

1. Socio-demographic Information-Age, Occupation, Family income, etc.
2. Physical activity
3. Screen timing
4. Addictions
5. Scale- Depression, stress and anxiety from DASS 21 scale<sup>[5]</sup> - The scale contains 21 items and was developed by Lovibond and Lovibond, which is a modified shorter version of DASS42 questionnaire. Each of the three DASS-21 scales contains 7 items, divided into subscales with similar content. The depression scale assesses dysphoria, hopelessness, devaluation of life, self-deprecation, lack of interest/involvement, anhedonia and inertia. The anxiety scale assesses autonomic arousal, skeletal muscle effects, situational anxiety, and subjective experience of anxious affect. The stress scale is sensitive to levels of chronic non-specific arousal. It assesses difficulty relaxing, nervous arousal, and being easily upset/ agitated, irritable/ over-reactive an impatient. Scores for depression, anxiety and stress are calculated by summing the scores for the relevant items. Scoring and Interpretation of DASS-21 scores on the DASS-21 were multiplied by 2 to calculate the final score. Score of 0-9, 0-7and 0-14 was taken as normal for depression, anxiety and stress respectively. Recommended cut-off scores for conventional severity labels (normal, moderate, severe) are mentioned in Table 1.

**Table 1: DASS 21 score and interpretation**

	Depression	Anxiety	Stress
Normal	0-9	0-7	0-14
Mild	10-13	8-9	15-19
Moderate	14-20	10-14	19-25
Severe	21-27	15-19	26-33
Extremely severe	28+	20+	34+

A camp was organized in the selected school after taking the permission of the principal. Informed consent was given to the selected students prior to the camp. Along with the help of social workers and residents of Psychiatry, Community Medicine and Medicine departments, camp was implemented.

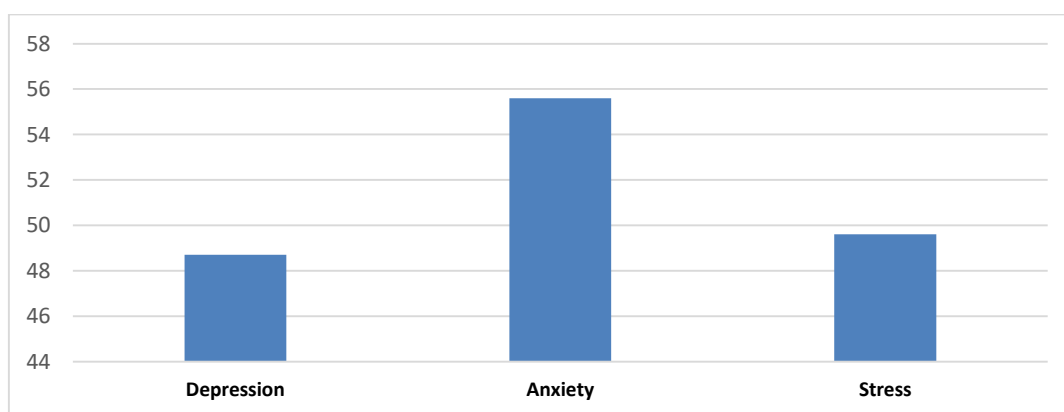
**Plan of statistical analysis-** All statistical analysis was done using SPSS software with version 28.0. Continuous variable results are shown by descriptive statistics. Categorized variable result is shown by frequency and percentages. Graphs are added whenever necessary. Chi-Square test is used to test the association between depression, anxiety and stress and different socio-demographic categorical variables. Throughout result 5% level of significance is used. All result is shown with 95% of confidence. P value < 0.05 is considered as significant.

### III. Result

A total of 365 girl students were studied in the present study. Minimum age was 13 year and maximum was 17year. The mean age of participants was 14.7 years ( $\pm$ .92). Maximum numbers of students were in class 10th (132, 36.2%), 81.6% belonged to nuclear family, 44.1% of the student's father were educated till secondary school, 46.6% of the students' fathers were self-employed and 56.2% of the students' mothers were working. (Table 2)

**Table 2: Sociodemographic profile of study participants (N=365)**

Sociodemographic factors	N (%)
<b>Age group (years)</b>	
13	21 (5.8)
14	142 (38.9)
15	127 (34.8)
16	63 (17.3)
17	12 (3.3)
<b>Class</b>	
8 <sup>th</sup>	112 (30.7)
9 <sup>th</sup>	121 (33.2)
10 <sup>th</sup>	132 (36.2)
<b>Type of family</b>	
Joint	42 (11.5)
Nuclear	298 (81.6)
Three generation	25 (6.8)
<b>Education of Father</b>	
Primary	120 (32.9)
Secondary	161 (44.1)
Higher secondary	79 (21.6)
Post graduate	5 (1.4)
<b>Occupation of Father</b>	
Self employed	170 (46.6)
Employed	149 (40.8)
Un employed	6 (1.6)
No father	40 (11)
<b>Occupation of Mother</b>	
Working	205 (56.2)
Non-working	160 (43.8)



**Figure 1: Prevalence of depression, anxiety and stress among study participants**

Overall prevalence of depression, anxiety and stress was 178 (48.7%), 203 (55.6%), 181 (49.6%) respectively (**Figure 1**). Most of students suffered from moderate type of depression, anxiety and stress (49.4%, 47.7%, 36.4%) respectively. (**Table 3**)

Depression was significantly associated in age 13(57.1%), 14 (51.4%) and 15 (51.9%) years, nuclear family (52.6%), less than 6 hours of sleep (55.8%), mild physical activity (50%), 2-3 hours of screen time in a day (59.4%), smoking (100%) and with annual family income between Rs 50000 to Rs 1 lac (58.3%). Depression was common in those students who had some disease (63.6%). However, this was not statistically significant. Anxiety was significantly associated with students of age 15 years (62.2%), nuclear family (57.7%), less than 6 hours of sleep (76.7%), mild physical activity (57.8%), those having some disease (63.6%), smoking (100%) and with annual family income between Rs 50000 to Rs 1 lac (75%). Students having screen time of 2-3 hours/day (58.8%) had higher anxiety levels however this was not statistically significant. Stress was significantly associated in age 15 years (57.4%), three generation family (64%), less than 6 hours of sleep (67.4%), mild physical activity (51%) and those having screen time of more than 3 hours (63.1%). It was noted that DAS was more common in mid adolescence having nuclear family with less than 6 hours of sleep, mild physical activity and annual family income of Rs 50000 to Rs 1 lac. (**Table 4**)

**Table 3: Distribution of study participants according to levels of severity according to DASS scale.**

	Mild (%)	Moderate (%)	Severe (%)	Extremely Severe (%)	Total
<b>Depression</b>	55 (30.8)	88 (49.4)	29 (16.2)	6 (3.6)	178 (100)
<b>Anxiety</b>	45 (22.1)	97 (47.7)	34 (16.7)	27 (13.3)	203 (100)
<b>Stress</b>	54 (29.8)	66 (36.4)	34 (18.7)	27 (14.9)	181 (100)

**Table 4: Factors associated with depression, anxiety and stress among study participants (n=365).**

Variable	Depression(n=178)		Anxiety(n=203)		Stress(n=181)	
	N	P value	N	P value	N	P value
<b>Age(years)</b>						
13(n=21)	12(57.1%)	0.001*	9(42.8%)	0.000*	12(57.1%)	0.000*
14(n=142)	73(51.4%)		83(58.4%)		78(54.9%)	
15(n=127)	66(51.9%)		79(62.2%)		73(57.4%)	
16(n=63)	24(38%)		29(46%)		15(23.8%)	
17(n=12)	3(25%)		3(25%)		3(25%)	
<b>Type of family</b>						
Joint(n=42)	13(30.9%)	0.000*	18(42.8%)	0.000*	18(42.8%)	0.001*
Nuclear(n=298)	157(52.6%)		172(57.7%)		147(49.3%)	
Three generation(n=25)	8(32%)		13(52%)		16(64%)	
<b>Number of hours of sleep</b>						
less than 6(n=43)	24(55.8%)	0.001*	33(76.7%)	0.001*	29(67.4%)	0.000*
more than 6(n=322)	154(47.8%)		170(52.7%)		152(47.2%)	
<b>Physical activity</b>						
Mild(n=294)	147(50%)	0.01*	170(57.8%)	0.001*	150(51%)	0.005*
Moderate(n=63)	25(39.6%)		27(42.8%)		28(44.4%)	
Severe(n=8)	6(75%)		6(75%)		3(37.5%)	
<b>Screen time</b>						
less than 1(n=188)	80(42.5%)	0.000*	101(53.7%)	0.08	79(42%)	0.007*
2-3 hours(n=158)	94(59.4%)		93(58.8%)		90(56.9%)	
more than 3 hours(n=19)	4(21%)		9(47.3%)		12(63.1%)	
<b>Any addiction</b>						
None(n=357)	172(48.1%)	0.01*	197(55.1%)	0.016*	181(50.7%)	0.19
Smoking(n=6)	6(100%)		6(100%)		0	
substance abuse(n=2)	0		0		0	
<b>Any disease</b>						
No(n=343)	164(47.8%)	0.33	189(55.1%)	0.003*	171(49.8%)	0.18
Yes(n=22)	14(63.6%)		14(63.6%)		10(45.4%)	
<b>Annual Family Income</b>						
less than Rs 50000(n=148)	59(39.8%)	0.000*	64(43.2%)	0.000*	57(38.5%)	0.000*
Rs 50000-Rs 1lac(n=72)	42(58.3%)		54(75%)		31(43%)	
more than Rs 1lac(n=145)	77(53.1%)		85(58.6%)		93(64.1%)	

\*significant P value

#### IV. Discussion

The present study was a descriptive, cross-sectional, school-based study conducted amongst adolescent children. The study aimed to determine the prevalence of depression, anxiety and stress among School going adolescents of 13-17 years age group in Pune and the factors associated with it. Present study showed that overall prevalence of depression among adolescent was 48.7% and comparable to studies conducted by Kumar A et al, Jha et al, Nagendra et al and Malik et al<sup>[13-15]</sup>, where prevalence of depression was found to be around 50%, which is in line with our study results. Several Indian studies conducted in adolescents have found a prevalence of depression ranging from 10% to 27%, which is much lower than our findings which can be attributed to different instruments used for measurements and different time duration. Most of student suffered from moderate type of depression (49.4%), followed by mild and severe (30.8%, 16.2%). In the study conducted by Kumar A et al, the prevalence of moderate depression (46.8%) was dominating and similar to our observations. However, Jha et al, Malik et al, Naushad et al observed mild type of depression most prevalent. Current study revealed that mid adolescent age group, smoking, mild physical activity, higher screen time and less hours of sleep were significantly associated with depression. Same factor was identified by Basin et al and reported a higher prevalence of depression in 10<sup>th</sup> division students (mid adolescents) due to the pressure of academic performance in the board examinations. Similar results have been reported by other studies, namely, Sandal, Kaur et al, Moreira et al, Liu et al and Gray-Stanley et al<sup>[16-19]</sup>. In case of anxiety, overall prevalence was found 55.6% and it was found that mid age adolescents were significantly more affected (62.2%) compared to early and late adolescents. Students with less than 6 hours of sleep (76.7%) were significantly associated with anxiety compared to those having more than 6 hours of sleep (52.7%). It was also significantly associated with nuclear family, mild physical activity and addiction like smoking. In contrary, study by Mishra et al reported prevalence was 15% and this difference may be due to different tool (Revised Children's Manifest Anxiety Scale) and settings. Academic stress is a type of stress that arises due to academic factors such as heavy school schedule, less sleep hours, high screen time and mild physical activity. Stress was also associated significantly with less than 6 hours of sleep, mild physical activity and higher screen time.

#### V. Conclusion

Mental health issues among adolescents, especially adolescent girls, are a significant public health concern in India. This study investigated the prevalence of depression, anxiety, and stress among adolescent girls in Pune, Maharashtra, India. The study's findings may contribute to the development of effective policies and interventions to address the mental health issues among adolescent girls in Pune, Maharashtra, India, and improve their mental health and well-being. Moreover, this study's findings may provide valuable insights into the prevalence and factors associated with mental health issues among adolescent girls in developing countries, which may help provide insights for policymakers, healthcare providers, educators, and parents to design targeted interventions to address these issues effectively.

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Institutional Ethics Committee approval was obtained.

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