ORIGINAL ARTICLE

Prevalence and sociodemographic correlates of depression and anxiety among secondary school students in Chennai, South India: A cross-sectional study

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Abstract:

Background: Anxiety and depression are common mental disorders affecting adolescents worldwide and in India. Various factors are associated with the prevalence of anxiety and depression among adolescents, which vary between geographic, socio-cultural, and economic backgrounds. Hence, the aim of the study was to estimate the prevalence of depression and anxiety and assess the socio-demographic factors associated with them among secondary school students in Chennai, south India.

Materials and methods: A cross-sectional study was conducted among grade 9 students from four schools in Chennai. Written informed consent was obtained from the parents/ guardian and assent from the students before recruitment into the study. The following tools were used to collect data: semi-structured proforma to collect the socio demographic details, perception of stress by Cohen's Perceived Stress Scale, mental wellbeing by The World Health Organisation- Five Well-Being Index (WHO-5) and anxiety and depression assessed using General Anxiety Disorder (GAD-7) and Patient Health Questionnaire (PHQ-9), respectively.

Results: A total of 569 students (323 (56.8%) boys, 246 (43.2%) girls) participated in the study. Prevalence of anxiety and depression among study participants was 46.3% and 39.6%, respectively. On the multivariate analysis, it was observed that students whose father had a blue-collar job and higher perceived stress were significantly more likely to have anxiety and depression.

Conclusion: Prevalence of anxiety and depression is high among adolescents in Chennai. The role of stress in the development of mental health issues indicates the need for positive mental health promotion, stress coping skills, and resilience training interventions in school settings.

Keywords: *depression, anxiety, prevalence, predictors, school students.*

INTRODUCTION

Adolescence is a critical and formative period in which individuals begin their transition from childhood to adulthood. Adolescents are at a higher risk of a range of mental health conditions due to the biological, cognitive, and psychosocial changes which occur during this vulnerable period. At the same time, mental health conditions negatively impact adolescent's development, quality of life, ability to fully participate in their communities and achieve their full potential.[1]

Mental disorders are the second leading cause of disease burden in terms of years lived with disability (YLDs) and the sixth leading cause of disability – adjusted life – years (DALYs) in the world, posing a serious challenge to health systems, particularly in low- income and middle – income countries.[2] Most mental disorders begin during youth (12–24 years of age), although they are often first detected later in life.[3] It is estimated that 10% - 20% of adolescents globally experience mental health conditions.[4] Globally, depression is the fourth leading cause of illness and disability among adolescents aged 15 -19 years and fifteenth for those aged 10 -14 years. Anxiety is the ninth leading cause of illness and disability among adolescents aged 15 – 19 years and sixth for those aged 10 – 14 years.[5]

Anxiety and depressive disorders are the most common mental health disorders among adolescents.[4, 6] The worldwide-pooled prevalence of any anxiety disorder is 6.5% and any depressive disorder is 2.6% in children and adolescents.[7] As per the National Mental Health Survey of India (2015- 2016), the prevalence of psychiatric disorders among adolescents (13 – 17) in India is 7.3%.[8] In an epidemiological study from India, 14.5% of adolescents were found to be suffering from anxiety disorders.[9] A study conducted among 400 adolescent students in a selected school in an urban area of Tirunelveli district, Tamil Nadu, India found the prevalence of depression and anxiety to be 73.6% and 86.5% respectively.[10] Anxiety and depression frequently co-occur and one often increases the risk of the other over time. They interfere with interpersonal relationships, academic achievement, and increase the risk of suicide and other mental disorders.[11]

With respect to the risk factors for anxiety and depression, studies have reported various education-related difficulties, adverse life events, relationship issues with parents or at home, family-related issues, economic difficulties, perceived rejection by peers, parents and teachers, substance abuse, child abuse and other factors.[3, 4, 12, 13] Considering the socio-cultural and demographic diversity of India, the policies, and interventions to manage the burden of mental disorders should be tailor-made to local contexts.

Therefore, a better understanding of the distribution and trends of mental disorders for each state of India is important.[2] Moreover, there is a need to understand the various risk factors associated with depression and anxiety among adolescents in different settings and regions. Hence, the objectives of the study were to estimate the prevalence of depression and anxiety among secondary school students in Chennai and to assess the socio-demographic factors associated with depression and anxiety among secondary school students in Chennai.

MATERIALS AND METHODS

Study site

Cross-sectional study was conducted among the secondary school students in the city of Chennai, Tamil Nadu, during the month of September and October 2019 after the approval from the institutional ethics committee of Schizophrenia Research Foundation. The schools were approached and convinced about the program and its logistics. The five schools which provided consent and approval for conducting the study were included.

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Study participants

All the students of class 9 were approached to take part in the study. As the students were <18 years, parental information sheet and parental consent form was sent to the parents. The opt-out method was used when obtaining the consent from the parents/guardian, where the parents/guardian who did not want their children to participate had to send the forms back stating so. After the consent from the parents/guardian, assent was obtained from the student before inclusion into the study. To maintain the anonymity and confidentiality, unique identification numbers were created for each participant. There was no exclusion criteria for the recruitment of the participants.

Tools used

Socio-demographic profile: Semi-structured proforma was developed to collect the socio demographic details. The socio demographic details are grouped into three broad categories namely basic information, education, and family details.

Perceived stress: The perception of stress was measured using Cohen's Perceived Stress Scale.[14] It is the most widely used scale for the measurement of perception of stress. PSS includes a number of direct questions that measures the level of experienced stress during the last month. The scores ranging from 0 to 4 for each question.

Psychological well-being: The psychological well-being of the students was assessed using the World Health Organisation- Five Well-Being Index (WHO-5).[15] The short self-reported and generic global rating scale measures the subjective mental well-being during the last 14 days. It consists of five positively phrased statements and have the scores ranging from 0 (none of the time) to 5 (All the time).

Anxiety: General Anxiety Disorder (GAD-7) is a self-administered patient questionnaire and was used to screen and measure the severity of generalized anxiety disorder.[16] The seven items in GAD-7 rates the severity of the symptoms over the last two weeks.

Depression: Patient Health Questionnaire (PHQ-9), 9 item scale was used to assess and monitor the severity of depression.[17] Each item is scored 0 to 3 providing a severity score of 0 to 27. The cut points were calculated from the score and each represents the severity, mild, moderate, moderately severe and severe depression.

Before administering the questionnaires to the students, they were explained about the purpose of the study, and assured of anonymity and confidentiality. Research assistants distributed the paper-based questionnaires to all the participants present in class on the day of administration and responses obtained. Questionnaire was administered both in English and Tamil based on the preference of the study participants. The time taken for the introduction and administration of questionnaire was around 1 hour 20 minutes.

Data analysis

The collected data were entered in Microsoft Excel and Statistical Package for Social Sciences (SPSS) Version 17.0 was used for the analysis of the collected data. The categorical variables were expressed in frequency and percentages and the continuous variables in mean. Chi-square test were used to find out the association between the Socio-demographic variables and Anxiety, Depression. It was considered that p-value < 0.05 statistically significant. Multivariate logistic regression was used to examine the association between different variables and anxiety & depression.

RESULTS

Socio-demographic profile of the study participants

A total of 569 students were included in the study. The mean age of the participants was 13.6 ± .6. Of the 569 participants, 323 (56.8%) of them were male. 561 (98.8%) of them did not discontinue school ever. Only few students (10, 1.8%) had already received a course on mental health via other available resources, while most of them did not receive any kind of structured information on mental health. The summary of the socio-demographic profile of the study participants is depicted in **Table 1**.

Variable	Category	Mean (SD), N (%)
Age		13.6 ± .6
Attendance in last 30 days		28.7 ± 2.4
Father's highest qualification		13.1 ± 3.1
Mother's highest qualification in years		12.8 ±3.2
Gender	Male	323 (56.8)
	Female	246 (43.2)

Variable	Category	Mean (SD), N (%)
Language (n=566)	Tamil	463 (81.8)
	English	8 (1.4)
	Hindi	14 (2.5)
	Telugu	20 (3.5)
	Others	61 (10.8)
Total no of years in education (n=567)	9	561 (98.6)
	10	1 (.2)
	11	5 (.9)
Discontinuation of school (n=568)	Yes	7 (1.2)
	No	561 (98.8)
Course on Mental health (n=563)	Received	10 (1.8)
	Not received	553 (98.2)
Parents living status (n=553)	Together	519 (93.9)
	Not together	34 (6.1)
Father's occupation (n=539)	White collar jobs	511 (94.8)
	Blue collar jobs	28 (5.19)
Mother's occupation (n=556)	White collar jobs	120 (21.58)
	Blue collar jobs	436 (78.5)
Household work of Parents (n=563)	Throughout the year	533 (94.67)
	Seasonally/once in a while	30 (5.33)
Monthly household income (n=564)	>126360	46 (8.2)
	63182-126360	90 (16)
	47266-63178	85 (15.1)
	31591-47262	100 (17.7)
	18953-31589	107 (19)
	6327-18949	111 (19.7)
	Less than or equal to 6323	25 (4.4)
Family history of mental disorders (n=568)	Yes	134 (23.6)
	No	434 (76.4)

Table 1. Socio demographic profile of the study participants (N = 569)

Prevalence of anxiety and depression among the study participants

Table 2 provides the prevalence of anxiety and depression among the study participants. The prevalence of anxiety was 46.3% (95%CI: 42.2-50.6 CI) and depression was 39.6% (95%CI: 35.6-43.8 CI).

Variable	N (%)	95% CI
Anxiety	259 (46.3)	42.1-50.6
Depression	224 (39.6)	35.6-43.8

Table 2. Prevalence of anxiety and depression among the study participants (N = 569)

Results from the univariate (**Supplementary Table 1a, 1b**) and multivariate logistic regression analysis (**Table 3**) showed blue collar occupation of the father, monthly household income and high perceived stress levels were statistically associated the prevalence of anxiety among the study participants. Whereas, gender, previous discontinuation of schools, parents living status, and school attendance in last 30 days were not significantly associated with the prevalence of anxiety. DISCUSSION

Variable	OR (95 % CI)	p-value
Gender		
Male	1	0.884
Female	1.04 (.61-1.77)	
Occupation of father (White collar job)	1	0.001
Occupation of father (Blue collar job)	7.76 (2.3-26.16)	
Household income		
More than 1,26,356	1	
63,182 – 1, 26,356	.34 (.12-.95)	0.040
47,266 – 63,178	1.06 (.38-2.91)	0.913
31,591 – 47,262	.81 (.31-2.11)	0.663
18,953 – 31,589	.52 (.19-1.43)	0.204
6,327 - 18,949	.56 (.21-1.47)	0.237
Less than or Equal to 6,323	1.42 (.36-5.7)	0.614
Mother's highest qualification	.96 (0.88-1.04)	0.275
Perceived stress	1.20 (1.14-1.27)	0.000
Well-being	.97 (.92-1.02)	0.262

Table 3. Multiple logistic regression analysis for factors associated with anxiety among the study participants

Factors associated with depression among the study participants

After univariate analysis (S**upplementary Table 2a, 2b**), multivariate logistic regression analysis was done to identify the factors associated with the prevalence of depression (**Table 4**). Results indicate that higher prevalence of depression was associated with students' fathers who has blue collar job and students who expressed high perceived stress. No gender differences were observed in the prevalence of depression among the study participants.

Variable	OR (95% CI)	p-value
Male	1	0.939
Female	.98 (.61-1.58)	
Occupation of Father (White collar job)	1	0.031
Occupation of Father (Blue collar job)	2.96 (1.11-7.93)	
Household income		
More than 1,26, 356	1	
63,182 – 1, 26,356	.70 (.28-1.76)	0.450
47,266 – 63,178	.72 (.28-1.86)	0.499
31,591 – 47,262	.72 (.29-1.76)	0.467
18,953 – 31,589	.49 (.20-1.22)	0.128
6,327 - 18,949	.46 (.19- 1.12)	0.086

Variable	OR (95% CI)	p-value
Less than or Equal to 6,323	3.73 (.95-14.74)	0.060
Perceived stress	1.19 (1.13-1.124)	0.000
Well-being	.96 (.92 – 1.01)	0.107

Table 4. Multiple logistic regression analysis for factors associated with depression among the study participants

The study aimed to estimate the prevalence of depression and anxiety and assess the socio-demographic factors associated with them among secondary school students in Chennai.

Our study found that the prevalence of anxiety was 46.3% and depression was 39.6% among secondary school students. As per the national mental health survey 2016, the prevalence of metal health problems in adolescents between the ages 13 – 17 was 7.3% and the rates were nearly double (13.5%) in urban metros.8 In comparison, a meta-analysis by Malhotra and Patra summarized that the prevalence of mental health problems in school settings was 23.3%.[18]

Previous studies from India have shown a wide variation in the prevalence of anxiety among the secondary school students, ranging from 17% to 85%.[19, 20, 21, 22] Previous studies carried out in India have reported an even greater prevalence of depression among school going adolescents.[23, 24, 25] Especially, study by Daya & Karthikeyan in 2018 reported that 73.6% of school going adolescents of Tirunelveli district, Tamilnadu have depression which is very higher than our findings.10 Jayanthi et al., in 2014 found school going adolescents in Tamil Nadu had 45.7% moderate, 25.4% mild, 19.6% severe and 9.3% minimal depression.26 The differences in the tools and their cut off scores used, the site of study, socio-economic status of the population and age group of study participants included could explain the variability in the results.

Many studies have identified the role of parent's SES (Socio Economic Status) in children's growth, development, and health outcomes.[27] SES is not only determined by the income but also by the occupational status and the level of education. Our study shows association between household income and anxiety and depression in the univariate analysis, however in the multivariate analysis only father's occupation which is also a part of SES has been found to have significant association with anxiety and depression among secondary school students. It was noted that students of fathers who are blue collar workers are more prone to anxiety and depression than students of fathers who are white collar workers. This possibly suggests that the parental occupation is a higher order factor that might be associated with the mental health of the students. Parent's occupation plays an important role in psychological wellbeing of the children. Specific working conditions influence certain psychological qualities, parent child relationships and other behaviours such as alcohol consumption and domestic violence.

A study conducted by Whitbeck, Les B., et al. in 1997 showed that the father's working conditions affect the fathers parenting behaviours.[28] Previous studies have observed the association between parenting styles adopted and depression and anxiety in children.[29, 30]

Our study shows significant association between the outcomes of anxiety and depression and stress. Many previous school-based cross-sectional studies among adolescents have also showed strong association between academic stress and anxiety and academic stress and depression.[31, 32]. Gender was not associated with the presentation of anxiety and depression among the students. This is unlike most of the other studies which have found a significant association between these internalizing disorders and female gender.[33, 34] There are few previous studies that showed no association between and gender and depression similar to our study.[13, 24] This may be related to the higher overall prevalence of anxiety and depression reported by the students which would suggest common adverse environmental circumstances that might be associated with both genders.

The present study has few limitations that include that this is a cross-sectional, school-based study that utilized self-administered screening questionnaires. Due to this, we would not be able to access the students who had dropped out of schools. The use of self-reported questionnaires may be associated with under or over reporting of symptoms. However, all students were given information about the availability and method to access mental health services. Students found it hard to answer specific socio demographic variables like monthly household income and educational qualification of parents, leading to errors.

In conclusion, results of this study indicate a high prevalence of internalizing symptoms of depression and anxiety among adolescents and shows a strong indication towards the link of mental health problems and social determinants of health. The role of stress in the development of mental health issues indicates the need for future mental health promoting interventions to focus on building stress coping skills in school settings. The role of paternal occupation and its effects on the child's mental health warrants further investigation. On a systemic level, addressing the modifiable risk factors and strengthening the protective factors would be essential to ensure the health and wellbeing of the students. More studies must be conducted in under privileged

communities, schools, rural areas, and in community settings to get good representation of the sample.

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CONFLICT OF INTEREST

Nil.

Competing interests

Authors have declared that no competing interests exist.

Authors' contributions

This work was carried out in collaboration among all authors. All authors have read and approved the final manuscript.

Consent

As per international standard or university standard, patients' written consent has been collected and preserved by the author(s).

Ethical approval

As per international standard written ethical approval has been collected and preserved by the author(s)

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