

Anxiety Unveiled: A Cross-Sectional Study on High School Students in Rural Tamil Nadu

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ABSTRACT

Background: Adolescence is a unique phase of human growth, marked by rapid cognitive, psycho-social, and physical development. Despite being a period of resilience, mental illnesses often begin during this stage. This study aimed to determine the prevalence of anxiety disorders among high school students in rural Tamil Nadu.

Methodology: A community-based cross-sectional study was conducted in high schools in the rural areas of Chengalpattu district, Tamil Nadu. High school students aged 12 to 15 years of both genders were included using a systematic random sampling method. A total of 234 students were interviewed using the Spence Children's Anxiety Scale (SCAS-Child) questionnaire to assess anxiety levels. Qualitative variables were described using mean and standard deviation, and ANOVA was applied to explore associations between anxiety and determining factors.

Results: Panic/agoraphobia emerged as the most common anxiety disorder. Obsessive-compulsive disorder and social phobia were higher in girls, while panic/agoraphobia, fear of physical injury, general, and separation anxiety were more prevalent in boys. Children with fathers in white-collar jobs showed higher panic/agoraphobia and general anxiety (Mean \pm SD: 12.13 \pm 4.5, $p < 0.02$), while those from lower socioeconomic classes had more separation anxiety (Mean \pm SD: 6.86 \pm 2.7, $p < 0.02$). Anxiety disorders were higher among children from joint or three-generation families.

Conclusion: There is a significant prevalence of anxiety among adolescents, with clear correlations to socio-demographic factors. Enhancing protective factors and addressing modifiable risks at the school level is crucial to improving adolescent mental health services.

Keywords: Adolescents, Mental health, Anxiety, Rural, Students

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INTRODUCTION

Adolescence is the period between the age of 10 to 19 according to World Health Organization (WHO).¹ During this distinct phase of human growth, adolescents undergo fast cognitive, psychosocial, and physical growth. Adolescents make up a sixth of the world's population, or approximately 1.2 billion, which is more at any time in history.² According to the 2011 Census, there are an estimated 253 million adolescents in India, or 21% of the total population.³

Although adolescence is a time of resilience and perseverance, mental illness frequently starts at this stage of growth. Adolescent mental health disorders account for a significant portion of the worldwide disease burden. Rendering to global estimates, one out of every seven adolescents suffered from mental illnesses in 2019.⁴ This translates to 166 million teenage boys and girls worldwide, according to studies.⁵ One of the most prevalent mental illnesses affecting children and adolescents in school age worldwide is anxiety disorders.

It has been acknowledged that mental health problems in adolescents are a significant problem in low-income nations like India. Fifty-five percent of the load and dysfunctions among adolescents are related to mental health issues.⁶ A substantial increase in prevalence of psychological disorders, ranging from 2 to 63%, has been observed in Indian epidemiological research conducted on adolescents.⁷

Anxiety and depressive disorders account for around 40% of mental health issues in adolescents aged 10-19.⁵ Within this age group, anxiety disorders are most common among older adolescents compared to younger adolescents. 3.6% of children aged 10 to 14 and 4.6% of those aged 15 to 19 are thought to suffer from an anxiety disorder.⁴

Anxiety is a natural human emotion to a stressful or threatening situation. In severe cases, anxiety can cause someone to become unstable and force them into unhealthy environments. Anxiety's specific effects include poor social and coping skills, which frequently result in social interaction avoidance, loneliness, low self-esteem, worries of social rejection, and difficulties making friends. School attendance and academic performance can be significantly impacted by anxiety disorders.⁸

In India, the vast majority of adolescents live in rural areas.⁹ Adolescents in rural communities' face neglect and exploitation. According to earlier research, adolescents in rural areas experience higher rates of mental health problems than those in metropolitan areas. This is explained by the disparities in the two regions' environments and lifestyles.¹⁰

However, The Right to Education Act of 2009, mandates that all children and adolescents to attend schools in their community.¹¹ Schools are thus an appropriate setting for screening for anxiety problems among adolescents. Studies on the prevalence

of mental health issues among adolescents in India are scarcer than in Western nations. Research on anxiety disorders in India are scarce, particularly when it comes to school-age children. Hence this study is directed to find the prevalence of anxiety disorder among high school students in rural area of Tamil Nadu.

METHODOLOGY

A community-based cross-sectional study was carried out between January 2024 and March 2024 in the high schools located in rural areas of Chengalpattu district, Tamil Nadu. High school students of both gender aging between 12 to 15 years were included in the study. High school students diagnosed with neuropsychiatric illness or those having history of recent episode of grief were excluded. The study proposal has been approved by the institutional human ethics committee.

Sample size was calculated based on the study by Madasu S et al¹², considering a 16.6% prevalence of anxiety, with 95% confidence interval and 5% allowable error the sample size was calculated to be 213. To account for a non-response rate of 10%, a total of 234 high school students were approached and interviewed. Out of 8 blocks in Chengalpattu district one block was selected by simple random sampling technique. Out of the 11 schools in the selected block, through simple random sampling method 3 schools were selected and the line list of eligible students were prepared based on the inclusion and exclusion criteria. Systematic random sampling method was used to recruit the study participants from the line list. Out of the 234 students approached all 234 students responded positively (0 non-respondents).

A pre-tested semi-structured questionnaire comprising of two sections was used to collect the data. The first section comprised socio-demographic details and the second section had Spence Children's Anxiety Scale – child (SCAS – child)¹³ questionnaire to assess the anxiety level among the study population. This is a 45-item self-report scale used to assess severity of anxiety symptoms in children aged 8-15 years. The SCAS-Child assesses six domains of anxiety which constitute six subscales: Separation anxiety (items 5, 8, 12, 15, 16, 44); Social phobia (items 6, 7, 9, 10, 29, 35); Obsessive compulsive (items 14, 19, 27, 40, 41, 42); Panic/agoraphobia (items 13, 21, 28, 30, 32, 34, 36, 37, 39); Physical Injury (items 2, 18, 23, 25, 33); and Generalised anxiety (items 1, 3, 4, 20, 22, 24)

Data was collected after obtaining informed assent & consent from the participants and school management. Data entry and analysis were done using a Microsoft Excel spreadsheet and Statistical Package for Social Sciences v27. Qualitative variables were described as mean and standard deviation while the ANOVA and multiple linear regression analysis was used to find the association between anxiety and its

determining factors. P <0.05 was considered significant.

Approval of Institutional Ethical Committee: IHEC-1/2368/23 dated 19/01/2024

RESULTS

Study participants, age ranged from 12 to 15 years. Majority (52.6%, n = 123) of the participants were boys. Majority of the parents, 53.4% (n = 125) of fathers and 49.1% (n = 115) of mothers had blue collar jobs. Also 145 (62%) of them belonged nuclear family, 89 (38%) were from other types of family (Table 1).

Overall, panic/agrophobia was found to be the most common anxiety disorder. Out of the 6 anxiety disorders, obsessive compulsive disorder and social phobia were found higher in girls whereas panic disorder, physical injury, general and separation anxiety were found higher in boys.

Children whose father had white collar jobs were found to have more panic/agrophobia and general anxiety. Also, those children belonging to less than or equal to lower middle class had separation anxiety disorder. Children belonging to joint and three gen-

eration family had more anxiety disorder when compared to children from nuclear families (Table 3).

Table 1: Socio-demographic details of the study population, (n = 234)

Variables	Participants (%)
Participant's age	
12 - 13	168 (71.8)
14 - 15	66 (28.2)
Participant's gender	
Boys	123 (52.6)
Girls	111 (47.4)
Father's occupation	
Blue collar jobs	125 (53.4)
White collar jobs	109 (46.6)
Mother's occupation	
Unemployed	44 (18.8)
Blue collar jobs	115 (49.1)
White collar jobs	75 (32.1)
Socio-economic classification	
≥ Upper middle class	111 (47.4)
≤ Lower middle class	123 (52.6)
Current Marital status of parents	
Married	210 (89.7)
Widowed / Separated	24 (10.3)
Type of family	
Nuclear	145 (62)
Joint family	89 (38)

Table 2: Prevalence of anxiety disorder among the study population, (n = 234)

Anxiety disorders	Boys Mean (SD)	Girls Mean (SD)	Total Mean (SD)
General anxiety	4.82±3.3	4.32±3.4	4.58±3.3
Separation anxiety	6.58±2.6	6.41±2.7	6.50±2.6
Fear of Physical injury	5.43±2.5	5.24±2.4	5.34±2.4
Panic/Agrophobia	11.78±4.5	10.98±4.9	11.40±4.7
Social phobia	5.93±3.2	6.19±3.2	6.06±3.2
Obsessive compulsive disorder	6.61±2.9	6.64±2.9	6.62±2.8

Table 3: Association of anxiety disorders with socio-demographic factors, (n = 234)

Variables	Panic/agrophobia (Mean±SD)	P value	Separation anxiety (Mean±SD)	P value	Physical injury (Mean±SD)	P value	Obsessive compulsive (Mean±SD)	P value	General anxiety (Mean±SD)	P value	Social phobia (Mean±SD)	P value
Participant's age (yr)												
12 - 13	11.44±4.9	0.19	6.49±2.5	0.59	5.37±2.5	0.49	6.65±2.8	0.83	4.77±3.5	0.12	5.98±3.3	0.51
14 - 15	11.30±4.3		6.52±2.8		5.27±2.3		6.56±2.9		4.11±2.7		6.24±2.9	
Participant's gender												
Male	11.78±4.5	0.20	6.58±2.6	0.63	5.43±2.5	0.56	6.61±2.9	0.93	4.82±3.3	0.24	5.93±3.2	0.54
Female	10.98±4.9		6.41±2.6		5.24±2.3		6.64±2.8		4.32±3.4		6.19±3.2	
Father's occupation												
Blue collar jobs	10.77±4.8	0.02*	6.52±2.5	0.90	5.40±2.4	0.70	6.55±2.9	0.68	4.12±3.0	0.02*	5.75±3.2	0.12
White collar jobs	12.13±4.5		6.48±2.6		5.28±2.4		6.71±2.8		5.11±3.5		6.40±3.1	
Mother's occupation												
Unemployed	12.43±4.7	0.26	6.52±2.3	0.88	5.64±2.4	0.55	6.07±2.8	0.35	4.64±3.0	0.99	6.57±3.3	0.50
Blue collar jobs	11.07±4.7		6.42±2.7		5.18±2.3		6.70±3.0		4.58±3.3		5.94±3.2	
White collar jobs	11.31±4.7		6.61±2.6		5.41±2.6		6.83±2.5		4.55±3.4		5.93±2.9	
Socio-economic classification#												
Upper middle	11.14±4.7	0.41	6.10±2.4	0.02*	5.07±2.4	0.11	6.69±3.0	0.72	4.50±3.3	0.73	6.10±3.2	0.35
Lower middle	11.64±4.7		6.86±2.7		5.59±2.5		6.56±2.7		4.65±3.4		6.02±3.1	
Current Marital status of parents												
Married	11.45±4.8	0.63	6.55±2.6	0.36	5.36±2.4	0.78	6.58±2.8	0.45	4.56±3.2	0.79	6.07±3.2	0.87
Widowed/Separated	10.96±4.4		6.04±2.9		5.21±2.1		7.04±3.4		4.75±4.0		5.96±2.8	
Type of family												
Nuclear	10.62±4.2	0.01*	6.17±2.7	0.01*	4.97±2.2	0.01*	6.08±3.0	0.01*	3.96±3.2	0.01*	5.24±3.0	0.01*
Joint family	12.67±5.2		7.03±2.3		5.94±2.6		7.51±2.4		5.60±3.2		7.38±2.9	

*P < 0.05 significant (ANOVA test); # Modified Kuppasamy classification

Table 4: Multiple linear regression analysis for factors associated with anxiety among the study participants

Variables	Unstandardized Coefficients		Standardized Coefficients Beta	t value	Sig	95% CI	
	B	Std Error				Lower	Upper
Separation							
Constant	5.091	1.354		3.759	.000	2.422	7.759
Age	.155	.382	.027	.407	.684	-.597	.908
Gender	-.242	.344	-.046	-.704	.482	-.921	.436
Father's occupation	.049	.354	.009	.140	.889	-.647	.746
Mother's occupation	-.188	.259	-.050	-.727	.468	-.697	.321
Socio-economic status	.897	.362	.171	2.480	.014	.184	1.609
Marital status (parents)	-.674	.567	-.078	-1.188	.236	-1.792	.444
Type of family	.921	.353	.171	2.606	.010	.224	1.617
Social phobia							
Constant	1.840	1.580		1.165	.000	1.273	4.953
Age	.324	.445	.046	.728	.467	-.553	1.202
Gender	.094	.402	.015	.233	.816	-.698	.885
Father's occupation	.865	.412	.135	2.096	.037	.052	1.677
Mother's occupation	-.570	.302	-.125	-1.889	.060	-1.164	.025
Socio-economic status	.266	.422	.042	.631	.528	-.565	1.097
Marital status (parents)	.061	.662	.006	.093	.926	-1.243	1.366
Type of family	2.271	.412	.346	5.513	.000	1.460	3.083
OCD							
Constant	3.895	1.490		2.615	.010	.960	6.830
Age	-.073	.420	-.011	-.174	.862	-.901	.755
Gender	-.066	.379	-.011	-.175	.861	-.812	.680
Father's occupation	.169	.389	.029	.434	.665	-.597	.935
Mother's occupation	.269	.284	.065	.947	.344	-.291	.830
Socio-economic status	-.272	.398	-.047	-.685	.494	-1.056	.511
Marital status (parents)	.533	.624	.056	.854	.394	-.697	1.763
Type of family	1.395	.389	.234	3.591	.000	.630	2.161
Panic							
Constant	8.111	2.397		3.384	.001	3.388	12.833
Age	-.187	.676	-.018	-.276	.783	-1.518	1.145
Gender	-.951	.609	-.100	-1.561	.120	-2.152	.249
Father's occupation	1.687	.626	.177	2.697	.008	.455	2.920
Mother's occupation	-1.062	.457	-.157	-2.322	.021	-1.964	-.161
Socio-economic status	1.125	.640	.118	1.759	.080	-.136	2.386
Marital status (parents)	-.240	1.004	-.015	-.239	.811	-2.219	1.739
Type of family	2.371	.625	.243	3.793	.000	1.139	3.603
Physical injury							
Constant	4.258	1.270		3.351	.001	1.754	6.761
Age	.007	.358	.001	.019	.985	-.699	.713
Gender	-.310	.323	-.063	-.961	.337	-.947	.326
Father's occupation	-.003	.332	-.001	-.010	.992	-.657	.650
Mother's occupation	-.284	.243	-.081	-1.170	.243	-.762	.194
Socio-economic status	.636	.339	.129	1.874	.062	-.033	1.304
Marital status (parents)	-.242	.532	-.030	-.454	.650	-1.291	.807
Type of family	1.043	.331	.206	3.148	.002	.390	1.696
Generalized anxiety							
Constant	2.018	1.675		1.205	.230	-1.282	5.319
Age	-.758	.472	-.102	-1.604	.110	-1.688	.173
Gender	-.632	.426	-.095	-1.484	.139	-1.471	.207
Father's occupation	1.227	.437	.184	2.805	.005	.365	2.088
Mother's occupation	-.404	.320	-.085	-1.264	.208	-1.034	.226
Socio-economic status	.358	.447	.054	.801	.424	-.523	1.239
Marital status (parents)	.484	.702	.044	.690	.491	-.899	1.867
Type of family	1.775	.437	.259	4.063	.000	.914	2.636

*P < 0.05 significant

After adjusting for confounders, father's occupation was found to significantly influence anxiety disorders like social phobia, panic disorder and generalized anxiety. However, mother's occupation was found to have significant negative influence on panic

disorder. Socio-economic status was found to significantly influence separation disorder. Type of family had influence on almost all the 6 types of anxiety disorders studied (Table 4).

DISCUSSION

According to 2016 National Mental Health Survey, 7.3% of rural adolescents between the age of 13 and 17 reported having mental health disorders.¹⁴ In contrast, a meta-analysis conducted by Malhotra and Patra concluded that there was a 23.3% rise in mental health disorders in educational settings.¹⁵

In our investigation, the two most prevalent forms of anxiety disorders were determined to be panic/agoraphobia and obsessive-compulsive disorder. Panic disorder was reported high among male students and obsessive-compulsive disorder was found to be higher among female students in this study. Similar study by Omkarappa DB et al¹⁶ conducted in rural government schools of Bangalore south among children aged between 12 and 15 found higher prevalence of generalized anxiety followed by social phobia. Majority of all the anxiety disorders mean score were found to be higher in male students when compared to female students except obsessive-compulsive disorder. The reason for higher anxiety prevalence among male students may be due to societal expectations to succeed, academic pressure in competitive environment and emotional suppression in accessing or seeking help for their anxiety issues.

Bakhla et al¹⁷ conducted a similar study in rural Jamshedpur and found that female students had higher mean score for all anxiety disorder when compared to male students. Obsessive-compulsive disorder followed by generalized anxiety were found to be more prevalent. Using the SCARED instrument, another study conducted in urban Karnataka by Jayashree et al found that the prevalence of panic disorders was higher among children aged 15 to 18.¹⁸ In contrast study by Muthusamy et al in urban areas revealed that separation anxiety was more prevalent followed by panic disorder among adolescents.¹⁹

The results of a rural community-based study conducted by Nair et al in Kerala were comparable.²⁰ Another study by Dharmalingam et al in rural Tamil Nadu found the prevalence of anxiety to be 43.5% among school going adolescents.²¹ Variations in prevalence estimates may be due to a variety of factors, including cross-cultural variation, utilization of different survey instruments, variations in the age range of adolescents under study, and variations in sampling techniques.

Similar to our study, only a small number of earlier research like Singh et al and Omkarappa DB et al¹⁶ found no correlation between gender and anxiety.²² This is in contrast to the majority of other studies that have discovered a strong correlation amongst the gender. This might be connected to the increased general prevalence of anxiety that the students reported, which would imply unfavorable environmental conditions that are likely to affect people regardless of genders.

The socioeconomic status of parents has been linked

in numerous studies to the development, growth, and health consequences of their children. It was observed that children with blue-collar fathers are more likely than those with white-collar fathers to experience anxiety. The parents' line of work has a big impact on the kids' psychological health. Particular work environments have an impact on parent-child relationships, parenting styles, and other behaviors including domestic abuse.²³

This increased prevalence of anxiety as mental health issues indicates the need for future mental health promoting interventions to focus on building stress coping skills in school settings. The Rashriya Kishore Swasthya Karyakarm (the National Adolescent Health Programme) includes mental health as an important component as a part of integrated service package.²⁴ Moreover, the SGD goal 3 is to ensure healthy lives and promote well-being for all at all ages. These goals are essential for decreasing adolescent preventable mortality.²⁵

The limitation of study is i) the study was conducted among school going children, we would not be able to access the students who had dropped out of schools. ii) The use of interview technique may be associated with under or over reporting of symptoms. iii) Students found it hard to answer specific socio demographic variables like monthly household income and educational qualification of parents, leading to errors. iv) there is little room for causal inference in cross-sectional studies v) additional factors exacerbating anxiety like cultural background or the school environment of the students were not assessed. However, all students were given information about the availability and method to access mental health services.

CONCLUSION

Adolescence is a transitory period which brings numerous changes to the individual, and the perception of stress from a variety of circumstances promotes several common medical conditions, especially anxiety-related disorders. The study concludes that there is an elevated risk of anxiety amongst adolescents and that there is a clear correlation between social demographic characteristics and mental health issues.

To safeguard the health and wellness of the students, it would be imperative to improve the protective factors and address the risk variables that can be modified on a systemic level. School teachers can help adolescents learn and practice stress and anxiety management techniques at school. In India, parent education is particularly necessary to address the issue of academic pressure and the tendency to compare one's own child's performance to that of the top students. At the primary care level, all staff members should be trained to screen teenagers for commonest psychological problems such as anxiety disorders,

and send them for specialist care. This will improve and augment the current network of adolescent health services.

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