

Anxiety Disorders among Adolescents in a Rural Area of Northern India using Screen for Child Anxiety-Related Emotional Disorders Tool: A Community-based Study

Swapna Madasu, Sumit Malhotra, Shashi Kant, Rajesh Sagar¹, Ashwani Kumar Mishra², Puneet Misra, Farhad Ahamed

Centre for Community Medicine, All India Institute of Medical Sciences, ¹Department of Psychiatry, All India Institute of Medical Sciences, New Delhi, ²National Drug Dependence and Treatment Centre, Ghaziabad, Uttar Pradesh, India

Abstract

Background: Anxiety disorders are the most frequent mental disorders encountered in childhood and adolescent years. The number of epidemiological studies done in this area within India is limited. **Objectives:** We determined the prevalence of anxiety disorders among adolescents in a rural community of Ballabgarh block, district Faridabad, Haryana. Secondly, we also assessed sociodemographic and other factors associated with anxiety disorders among adolescents. **Materials and Methods:** This community-based cross-sectional study was conducted among 729 adolescents (10–19 years). Screen for Child Anxiety-Related Emotional Disorders tool was used for assessing prevalence and type of anxiety disorders. Sociodemographic and personal factors were included in the logistic regression multivariable model to establish associations. Adjusted odds ratios (AOR) along with 95% confidence intervals (CI) are computed. **Results:** The prevalence of anxiety disorders among adolescents was (22.7%; 95% CI: 19.7–26.0). Girls (27.6%) had higher prevalence than boys (18.3%) ($P < 0.01$). Social anxiety disorder (14.3%; 95% CI: 11.7–16.9) was the most common form of anxiety disorder. Female sex (AOR 1.8; 95% CI 1.2–2.6; $P < 0.01$), lower-middle socioeconomic status (AOR 1.96; 95% CI 1.2–3.1; $P < 0.01$), and presence of stressful event within the past 1-year (AOR 2.48; 95% CI: 1.12–5.06; $P = 0.01$) were found to be associated with the presence of anxiety disorders. **Conclusions:** Anxiety disorders are common among adolescents in rural settings of India. Tackling them will require appropriate health systems response. Adequate interventions should be incorporated at primary care level to address the mental health concerns of adolescents.

Keywords: Adolescents, anxiety disorders, Ballabgarh, community, rural, Screen for Child Anxiety-Related Emotional Disorders

INTRODUCTION

Adolescence is the critical formative stage in one's life spanning between childhood and adulthood years. Boys and girls aged 10–19 years are defined as adolescents.^[1] About 1.2 billion of world's population belong to this age group.^[2] In India, 21% of the population falls in (253 million) adolescent years.^[3]

During adolescence, dynamic brain development occurs, and complex socio-environmental interactions happen that influences individual's capabilities for future life. The mental health disorders commonly develop and become apparent during adolescence. Worldwide 10%–20% of children and adolescents experience mental health disorders, and half of all mental illnesses begin during adolescence.^[4] Among all mental health disorders, anxiety disorders are the most frequent

disorders in children and adolescents affecting almost 7% of them worldwide.^[5] In an epidemiological study from India, 14.5% of adolescents were found to be suffering from anxiety disorders.^[6] Within India, limited number of epidemiological studies have been done in this area.

The screening assessment for anxiety disorders is the first step for identification of these, as recommended by the American Academy of Child and Adolescent Psychiatry.^[7] Various

Address for correspondence: Dr. Sumit Malhotra, Room No. 27, Old OT Block, Centre for Community Medicine, All India Institute of Medical Sciences, New Delhi - 110 029, India.
E-mail: drsumitaiims2012@gmail.com

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screening tools are available to identify anxiety disorders among adolescents. One of the widely used screening instruments for children and adolescents is the Screen for Child Anxiety Related Emotional Disorders (SCARED). This questionnaire is based on the Diagnostic and Statistical Manual of mental disorders (DSM).^[8]

Here, we report the prevalence of anxiety disorders among adolescents using SCARED tool. We also report sociodemographic and other factors associated with anxiety disorders among adolescents in a rural community of Ballabgarh block, district Faridabad, Haryana.

MATERIALS AND METHODS

This was a community-based cross-sectional study undertaken within Intensive Field Practice Area (IFPA) of Comprehensive Rural Health Services Project (CRHSP), Ballabgarh, Faridabad, Haryana, India. CRHSP is run by the All India Institute of Medical Sciences (AIIMS), New Delhi, in collaboration with the state government of Haryana. The IFPA is spread over 28 rural villages covering a population of about 95,000.

The study included adolescent boys and girls, residing in the villages under IFPA, for at least past 6 months. Adolescents, who were married, unable to communicate, and not contactable even after making three home visits, were excluded from the study.

Assuming the prevalence of anxiety disorders among adolescents as 14.5%,^[6] alpha value of 0.05, power of 80%, relative precision of 20%, non-response rate 20%, 679 unmarried adolescents were minimum required within the study. The Health Management Information System (HMIS) maintained at CRHSP, Ballabgarh, has information on all persons residing in the field practice area. A list of all eligible adolescents residing in the study area was prepared from HMIS. This served as the sampling frame. In our study area, 17,272 adolescents were there in the HMIS. Through a computer-generated random sequence, a list of 700 adolescents was drawn from the sampling frame. At the time of data collection, one of the villages had communal riots, so this village and sampled adolescents from that village ($n = 71$) were excluded. In addition, 100 adolescents were later randomly sampled. In this way, 729 adolescents were finally considered for inclusion in this study. House-to-house visits were made to all selected households and participants.

A pretested structured interview schedule was used to collect information on sociodemographic details and other personal details. Socioeconomic status was ascertained using Udai-Pareek Scale. SCARED tool was administered for identifying anxiety disorders.^[8] The tool has 41 items and measures total anxiety and includes five factors or subscales for measuring a specific type of anxiety disorder (separation anxiety disorder, generalized anxiety, social anxiety disorder, school phobia, and panic/somatic symptoms). In addition, it provides a cutoff to identify young people who are

experiencing clinically significant symptom levels. The tool has good reliability.^[9] In addition, it has been found to have good convergent and discriminant validity.^[10] This tool has been validated in India. Each category of anxiety disorder has individual cutoff value, and a total cut-off of ≥ 21 was considered to be screen positive. A total cutoff of ≤ 20 with any of the category positive suggested the presence of one or more of the anxiety disorders.^[6] The individual cut-off for subscales used for identifying the type of specific anxiety disorder was as follows: social anxiety disorder (≥ 8), separation anxiety disorder (≥ 8), separation anxiety disorder (≥ 8), generalized anxiety disorder (≥ 7), panic disorder (≥ 5), and significant school avoidance (≥ 3) respectively. The SCARED tool was administered to study adolescents by a single investigator who was trained in psychiatry department for 1 month under the supervision of senior psychiatrist. The study area runs a primary care psychiatry program and is supported by a team of primary care physicians and psychiatrists.

Data were entered into Microsoft Excel version 2013. STATA software version 13.0 was used for statistical analysis. The prevalence of anxiety disorders was reported as the proportion with 95% confidence interval (CI). Associations were reported as Odds ratios along with 95% CI. Bivariate logistic regression was conducted, and variables with $P < 0.25$ on bivariate analysis were entered into multivariable model for identifying associated factors. A $P < 0.05$ was considered statistically significant.

Ethical approval was taken from the Institute Ethics Committee of AIIMS, New Delhi, India. For participants < 18 years, written informed assent from the participant and informed written consent from parent/caregiver was taken. All the adolescents found with anxiety disorders, or any other concomitant mental illness was referred to CRHSP, Ballabgarh, for further management by a psychiatrist.

RESULTS

Of 729 adolescents in random list, 51 (7.5%) were either excluded ($n = 24$) or could not be contacted as houses were found locked even after three separate visits ($n = 27$). Refusal to give consent ($n = 9$), permanent out-migration from study area ($n = 5$), marriage ($n = 7$), and inability to comprehend the questionnaire ($n = 3$) were the reasons behind exclusion. Thus, a total of 678 adolescents were included in the study; the response rate being 92.5%. The response rate was almost equal for boys (93.7%) and girls (92.3%). The mean age (standard deviation) of the participants was 14.2 (2.5) years. Majority (47.4%) of the adolescents completed more than 8 years of education. A total of 289 (42.6%), 241 (35.6%), and 148 (21.8%) adolescents belonged to upper, middle, and lower middle socio-economic strata as per Udai Pareek scale, respectively. Thirty-eight (5.6%) adolescents reported at least one stressful event in the past 1-year. Fifteen (2.2%) adolescents gave a history of any chronic disease (diseases with the duration of more than 6 months) in the past 1-year.

Prevalence and types of anxiety disorders

A total of 154 adolescents were found to be suffering from anxiety disorders with a prevalence of 22.7% (22.7%; 95% CI: 19.7–26.0). The prevalence was found to be higher among girls (27.6%) than boys (18.3%) ($P < 0.01$) [Table 1].

The most common type of anxiety disorder was found to be social anxiety disorder with a prevalence of 14.3% (95% CI: 11.7–16.9). Panic disorder (13.4%; 95% CI: 10.8–15.9) was the second-most common anxiety disorder. When compared to boys, a higher proportion of girls was found to be positive in all the categories of anxiety disorders [Table 2].

Observed maximum scores for each category of anxiety disorder were on the severe side. Maximum scores were obtained for panic disorder (score = 22) and generalized anxiety disorder (score = 17) [Table 3].

Sociodemographic and other associated factors

Female sex was found to be two times more associated with anxiety disorders than male sex (adjusted odds ratio [AOR] 1.8; 95% CI 1.2–2.6; $P < 0.01$). Adolescents from lower-middle socioeconomic status had almost two times higher odds of having anxiety disorders than adolescents from upper socioeconomic class (AOR 1.96; 95% CI 1.2–3.1; $P < 0.01$). The presence of stressful event in life within the past 1-year was found to have 2.5 times higher odds for anxiety disorders compared to adolescents without any stressful event (AOR 2.48; 95% CI: 1.12–5.06; $P = 0.01$). Age, completed years of education, working status, schooling status, family type, living status, and history of chronic diseases were found to be statistically insignificant in multivariable model [Table 4].

DISCUSSION

The prevalence of anxiety disorders among adolescents in

the current study (22.7%) was higher than that observed in a study done in Uttar Pradesh.^[11] Unlike our study, the later used Revised Children's Manifest Anxiety Scale (RCMAS) to estimate the prevalence of anxiety disorders among adolescents. SCARED tool, a modern instrument than RCMAS, is more closely connected to DSM and more precise in diagnosing anxiety problems in children and adolescents.^[12] A study done in Kerala found out prevalence of anxiety disorders using the same tool SCARED as 14.5%; however, this study included a nonrandom sample of adolescents through Anganwadi centers; and thus, the estimate was stated to be biased.^[6] Another study done among Tibetan adolescent refugees living in Northern India reported almost similar prevalence of anxiety disorders (21%).^[13] A study conducted in Northern China reported much lower prevalence of anxiety disorders (6.1%) among adolescents.^[14] Another study done in rural Uganda reported a higher prevalence of anxiety disorders (26.6%) among adolescents than our study.^[15] The use of different study tools, differences in study age group of adolescents, differences in sampling approaches, and cross-cultural variation could be the possible reasons for variation in prevalence estimates.

Social anxiety disorder (14.3%) and panic disorders (13.4%) were found to be the two most common types of anxiety disorders in our study. A community-based study done in Kerala reported similar findings.^[6] Another study done in Karnataka reported a similar prevalence of social anxiety disorders (18.9%) but higher prevalence of panic disorders (44.3%) among adolescents aged 15–18 years using SCARED tool.^[16] In the current study, higher proportion of girls was found to be positive in all the categories of anxiety disorders. Earlier study reported similar findings.^[17] Subscale scores in this study were largely equivalent to the studies done among Arabian and Dutch adolescents.^[18,19] However, the

Table 1: Screen for Child Anxiety-Related Emotional Disorders score categories distribution by sex for screen positive participants

Prevalence of anxiety disorders by SCARED	Total=678, n (%)	Males=356, n (%)	Females=322, n (%)	P
SCARED total ≥ 21 with one or more categories +ve	109 (16.1)	43 (12.1)	66 (20.5)	0.003
SCARED total ≤ 20 with any one the AD positive	43 (6.4)	22 (6.2)	21 (6.5)	0.857
SCARED total ≥ 21 with none of the categories positive	2 (0.3)	0	2 (0.6)	0.136
Total prevalence	154 (22.7)*	65 (18.3)	89 (27.6)	0.004

*95% CI: 19.7-26.0. SCARED: Screen for Child Anxiety-Related Emotional Disorders, CI: Confidence interval, AD: Anxiety Disorders

Table 2: Distribution of participants by type of anxiety disorders identified by Screen for Childhood Anxiety-Related Emotional Disorders by sex [N=678]

Type of anxiety disorders by SCARED	n (%)	95% CI	Males=356, n (%)	Females=322, n (%)	P
Social anxiety (SC)	97 (14.3)	11.7-16.9	41 (11.5)	56 (17.4)	0.029
Panic disorder (PD)	91 (13.4)	10.8-15.9	38 (10.7)	53 (16.5)	0.027
Generalized anxiety disorder (GAD)	60 (8.8)	6.7-10.9	21 (5.9)	39 (12.1)	0.004
Separation anxiety (SP)	45 (6.6)	4.7-8.5	13 (3.7)	32 (9.9)	0.001
Significant school avoidance (SH)	38 (5.6)	3.9-7.3	18 (5.1)	20 (6.2)	0.514
Total participants	154 (22.7)	19.7-26.0	65 (18.3)	89 (27.6)	0.004

One adolescent could have more than one condition positive. CI: Confidence interval, SCARED: Screen for Childhood Anxiety Related Emotional Disorders

Table 3: Mean scores for different Anxiety Disorders observed on Screen for Childhood Anxiety-Related Emotional Disorders administration

SCARED category	Mean (SD)	Minimum-maximum possible score	Observed maximum score
Significant school avoidance	4.39 (1.49)	3-8	7
Panic disorder	8.92 (4.01)	5-26	22
Generalized anxiety disorder	9.46 (2.73)	7-18	17
Separation anxiety disorder	9.66 (1.75)	8-16	15
Social anxiety disorder	9.86 (1.78)	8-14	14

SCARED: Screen for Childhood Anxiety-Related Emotional Disorders, SD: Standard deviation

Table 4: Associated factors with anxiety disorders in adolescents-multivariable model

Variable	Category (n)	Anxiety disorders (present), n (%)	Unadjusted OR (95% CI)	P	Adjusted Odds Ratio (95% CI)*	P
Age	10-14 (362)	84 (54.5)	1.00	-	1.00	-
	15-19 (316)	70 (45.5)	0.94 (0.65-1.35)	0.74	0.97 (0.67-1.40)	0.88
Sex	Male (356)	65 (18.3)	1.00	-	1.00	-
	Female (322)	89 (27.7)	1.71 (1.18-2.45)	<0.01	1.8 (1.22-2.56)	<0.01
Completed years of education	Up to primary (155)	39 (5.8)	1.00	-	-	-
	Middle (202)	45 (6.6)	0.85 (0.52-1.39)	0.53	-	-
	Above high school (321)	70 (10.3)	0.83 (0.53-1.30)	0.42	-	-
Socioeconomic status (Udai Pareek)	Upper class (289)	56 (36.4)	1.00	-	1.00	-
	Middle (241)	53 (34.4)	1.17 (0.76-1.78)	0.46	1.20 (0.78-1.84)	0.413
	Lower middle (148)	45 (29.2)	1.81 (1.15-2.86)	0.01	1.96 (1.23-3.12)	0.005
Working status	Not working (660)	150 (22.1)	1.00	-	-	-
	Working (18)	4 (0.6)	0.97 (0.31-2.99)	0.96	-	-
Schooling status	In school (600)	133 (19.6)	1.00	-	-	-
	Out of school (78)	21 (3.1)	0.77 (0.45-1.32)	0.35	-	-
Living status	Living with parents (672)	153 (22.6)	1.00	-	1.00	-
	Others (2)	1 (3)	3.41 (0.21-54.97)	0.39	-	-
Family type	Nuclear family (454)	454 (67.0)	1.00	-	-	-
	Extended family (224)	224 (23.0)	1.29 (0.88-1.88)	0.16	-	-
Stressful event (within last 1 year)	Absent (640)	138 (20.4)	1.0	-	1	-
	Present (38)	16 (10.4)	2.64 (1.35-5.17)	<0.01	2.48 (1.21-5.06)	0.01
Chronic disease	Absent (663)	147 (21.7)	1.0	-	1.00	-
	Present (15)	7 (1.0)	3.07 (0.93-9.85)	0.03	2.16 (0.72-6.61)	0.17

OR: Odds ratio, AOR: Adjusted OR, CI: Confidence interval

scores in the current study were higher than a school-based study done among Chinese adolescents.^[10] It is possible that cultural differences might account for elevated scores in children and adolescents in India.

The present study found that female sex, lower middle socioeconomic status, and presence of stressful life event within the past 1-year were associated with anxiety disorders among adolescents. The association of anxiety disorders and female sex has already been found in earlier studies.^[20,21] Studies have found that lower socioeconomic status had a positive association with anxiety status of adolescent.^[22,23] Female sex and lower socioeconomic status resulting in socially disadvantageous state could attribute behind higher likelihood to develop anxiety disorders. Experiencing stressful life events had been also found to be associated with anxiety disorders among adolescents.^[24]

This community-based study used a scientifically robust methodology and attained a high response rate (93%). The study results were reliable and generalizable to the similar population. The study tool (SCARED) was already validated in similar population in the Indian setting. The possibility of missing cases of anxiety disorders and misclassifying nonanxiety cases as anxiety disorders could not be ruled out. Even after undertaking adequate measures to build adequate rapport with adolescents, the possibility of information bias exists. The data collection was done by a female investigator. Thus, chances of providing more accurate responses by female adolescents were higher than male adolescents for socially undesirable responses. The study being a cross-sectional in nature, associations determined lacked temporality. Furthermore, SCARED tool is recommended to evaluate children from 8 to 18 years; we have covered the entire age

range of adolescents 10–19 years to provide an estimate for the entire adolescent years. Previously also in India, studies have evaluated using SCARED tool encompassing broad adolescent age up to 19 years.^[6]

CONCLUSION

The prevalence of anxiety disorders among rural adolescents residing in Ballabgarh was high (22.7% [95% CI: 19.7–26.0]). Social anxiety was the most common type of anxiety disorder. Female sex, lower middle socioeconomic class, and stressful event in the past 1-year were found to be significantly associated with anxiety disorders in adolescents. These findings point out that there is a need to address anxiety disorders within the ambit of health service delivery packages for adolescents residing in rural villages. It is imperative to roll out interventions adequately to identify these adolescents and support them with basket of services so that their anxiety and related sequel can be halted. The Rashtriya Kishore Swasthya Karyakarm (the National Adolescent Health Programme) includes mental health as an important component as a part of integrated service package. Mental health interventions for adolescents have not been adequately implemented due to weak delivery of adolescent health services at primary care level.^[25] These services require augmentation and strengthening at grassroots level by orienting all workforce at primary care level to screen adolescents for common mental health conditions including anxiety disorders and refer them for specialized response. Adolescent years are part of transitional phase that brings many changes to the individual and perceived stress due to many factors triggers many common health problems including anxiety disorders. Mental hygiene and promotion need to be strategized utilizing community and school platforms for adolescents. Our study generated evidence about a common mental health problem during adolescent stage and now calls for rolling out adequate interventions in our study area to address this unmet need. We believe it will serve as benchmark for studying the impact of these interventions at a later stage.

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Conflicts of interest

There are no conflicts of interest.

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