Original Article

Prevalence of depression and anxiety among children in rural and suburban areas of Eastern Uttar Pradesh: A cross-sectional study

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Abstract

Background: Psychiatric morbidity in children and adolescents is a major concern as they become more complex and intense with children's transition into adolescence. **Aim:** The aim of this study is to assess and compare the prevalence of depression and anxiety among children residing in rural and suburban area of eastern Uttar Pradesh and understand the burden of these problems in our society. **Materials and Methods**: Children, in the age group 11–18 years, were divided into 2 groups: Group I – 100 children from rural area Tikri; Group II – 100 children from suburban area Sunderpur. Their sociodemographic details were recorded. Children's Depression Inventory and Revised Children's Manifest Anxiety Scale were used to screen for depression and anxiety in children, respectively. The final diagnosis was done using present state examination in accordance with International Classification of Mental and Behavioral Disorders 10. Data were statistically analyzed using Chi-square test. **Results:** The prevalence of depression was found to be 14.5% while that of anxiety disorder was found to be 15%. There was no significant difference in the prevalence of depression or anxiety in rural and suburban areas ($P > 0.05$). Depression and anxiety were more prevalent in middle adolescence, in females, and in lower-middle socioeconomic group. Depression was more prevalent in the students of class 9^{th} –12^{th}, whereas anxiety was more in students of lower classes. Depression was more prevalent in joint families. These differences show some important trends regarding factors affecting these problems. **Conclusion:** This study yields useful information which could be of use in early management of psychiatric disorders present in the community and prevent their development into chronic disorders.

Keywords: Adolescence, anxiety, children, depression, prevalence

Introduction

Psychiatric morbidity in children and adolescents, as defined by Rutter *et al.*[1] is abnormality in behavior, emotions, and relationships which is developmentally inappropriate and of sufficient duration and severity to cause persistent suffering or handicap to the child and/or distress to the family or community. Adolescents suffer from psychosocial problems at one time or the other during their development. Most of these problems are transient and often go unnoticed. It is worthy to note that adolescents may exhibit these problems in one setting and not in other (e.g., home, group of friends, and school). Therefore, behaviors associated with mental disorders are often misunderstood. They may be considered intentional or deliberately willful. Social exclusion, punishments, and criticism may result in lowered self-esteem in adolescents. A mistaken and inappropriate understanding of mental disorders can also result in children and adolescents being deprived of the assistance they need.

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Approximately, 20% of adolescents have a diagnosable mental health disorder.[2] Furthermore, many mental health disorders are first present during adolescence.[2] About 20%–30% of adolescents have one major depressive episode before they reach adulthood.[3] For a quarter of individuals with mood disorders like depression; these first emerge during adolescence.[3] About 50%–75% of adolescents with anxiety disorders and impulse control disorders (such as conduct disorder or attention-deficit/hyperactivity disorder) develop these during adolescence.[3] Existing mental health problems become more complex and intense with children's transition into adolescence.[4] Untreated mental health problems among adolescents may lead to poor school performance, school dropout, strained family relationships, substance abuse, and engaging in risky sexual behaviors.[5]

In India, adolescents (10–19 years) constitute 21.4% or one-fifth of the total population.[6] However, there are only a few studies about adolescent psychosocial problems from India. Most of the epidemiological surveys on schoolgoing children and adolescents have reported a wide variation (20%–33%) in the prevalence of psychosocial problems.[7] An epidemiological study by the Indian Council of Medical Research showed the prevalence rates of child and adolescent psychiatric disorders to be 12.5% in children aged 0–16 years.[8] A meta-analysis of psychiatric morbidity among child and adolescents found the prevalence of 6.4% psychiatric disorders in community samples and 23.33% in school samples.[9] Although the WHO, in 1977, has recommended that every country should have a National Plan for Child Mental Health, India, still lacks a child and adolescent mental health program.[10] Proper attention paid at community level can help in preventing psychiatric and social morbidity. Early diagnosis and proper treatment of psychiatric morbidity will enable children to remain in the mainstream of education system and deal with their disability positively. Hence, there is an urgent need to develop mental health resources for children and adolescents in India.

Understanding the prevalence of psychiatric disorders among children and adolescents is essential for constituting a sound policy for the provision of mental health and other services. Therefore, the aim of this cross-sectional study was to assess and compare the prevalence of depression and anxiety among children of age group 11–18 years residing in the rural and suburban area of Varanasi district in eastern Uttar Pradesh.

Materials and Methods

This community-based, cross-sectional study was designed to assess the prevalence of depression and anxiety disorders (as per the International Classification of Mental and Behavioral Disorders 10 [ICD-10]), in rural and suburban areas of Varanasi district of eastern Uttar Pradesh. Tikari and Sunderpur areas of Varanasi were chosen as the study areas for rural and suburban population, respectively. This study was approved by the ethical committee of Institute of Medical Sciences, Banaras Hindu University.

Sampling procedure

It was decided to screen children of 25% of the total households in each of the study areas. Therefore, 100 households each in both the study areas (Tikari and Sunderpur) were to be selected. Each household was the sampling unit. Lists of all the households of Tikari and Sunderpur were obtained from Block Development Office and Municipal Corporation, respectively. Every fifth household was selected by systemic random sampling in each of the study area till desired sample size was achieved.

Selection of respondents

Following inclusion and exclusion areas were applied for the selection of participants.

Inclusion criteria

1. Children in age group of 11–18 years
2. Children without concurrent physical illness
3. Resident of the study area for > 6 months.

Exclusion criteria

1. Children below 11 and above 18 years of age
2. Children having neurodevelopmental disorders (mental retardation, etc.)
3. Participants whose parent did not give written consent for participating in this study.

After applying inclusion and exclusion criteria, 200 children were selected for the study and divided into 2 groups: Group I – 100 children from rural area Tikri; Group II – 100 children from suburban area Sunderpur. Study participants were contacted by door-to-door survey of each household and explained about the purpose of the study. Sociodemographic details such as age, sex, caste, income of family, type of family, and education were recorded for each participant.

Children's Depression Inventory (CDI), a 27-item, self-report symptom-oriented scale was used to screen for depression in children.[11] For each item, the child had three possible answers; 0 indicating an absence of symptoms, 1 indicating mild symptoms, and 2 indicating definite symptoms. The total score ranged from 0 to 54. Total scores were calculated by adding the scores for each item. A total score of 19 or greater on CDI scale indicated potential depression.

Revised Children's Manifest Anxiety Scale (RCMAS) was used to screen study participants for anxiety disorder.[12] RCMAS is a 37-item scale. Each item is given a score of 1 for a "yes" response and 0 for a "no" response. Total anxiety score was obtained for each participant by adding the scores for all items. An overall cutoff point of 19 was used to identify children experiencing clinically significant levels of anxiety.

After screening of participants, diagnosis of depressive disorder and anxiety disorder was made by the present state examination in accordance with ICD-10 classification of mental and behavioral

disorders; Diagnostic criteria for research (WHO 1993). The data were statistically analyzed by Chi-square test using SPSS Inc. Released 2007. SPSS for Windows, Version 16.0. Chicago, SPSS Inc.

Result

This cross-sectional study consisted of 200 study participants, in the age group of 11–18 years, of which 111 (55.5%) were male and 89 (44.5%) were female. Table 1 summarizes the descriptive characteristics of the study population. There was no difference between the study groups in terms of sociodemographic variables.

Score for screening depression in children

CDI score was positive (>19) in 14.5% (29 participants) of the total study population. In Group I (rural area), CDI score was positive in 15 participants. In Group II (urban area), CDI score was positive in 14 participants. There was no statistically significant difference in children of rural and urban areas in terms of prevalence of depression ($P = 0.841$). Out of these 29 participants, 26 (89.65%) were in the age group of 14–17 years. Table 2 shows the prevalence of depression in relation to sociodemographic variables.

There was no significant difference in the prevalence of depression between male and female participants. About 19.1% females and 10.8% male participants had depression. Out of the total 29 participants with depression, 16 (55.17%) participants were studying in 9th–12th class. About 21.05% participants in joint family had depression, but only 10.48% participants in nuclear family had depression. This difference was statistically significant ($P = 0.039$). Maximum cases of depression, 51.7% (15 out of 29) were found in lower-middle socioeconomic group.

Revised Children's Manifest Anxiety Scale score for screening anxiety disorder in children

RCMAS score was positive (>19) in 15% (30 participants) of the total study population. In Group I (rural area), RCMAS score was positive in 13 participants and in Group II (urban area), RCMAS score was positive in 17 participants. There was no statistically significant difference in children of rural and urban areas in terms of prevalence of anxiety disorder ($P = 0.428$). Out of the 30 children suffering from anxiety disorder, 14 (46.67%) children were in the age group of 15–17 years. Table 3 demonstrates the prevalence of anxiety disorder in relation to sociodemographic variables. About 9.9% of males (6 in rural area and 5 in urban area) and 21.3% females (7 in rural area and 12 in urban

Table 1: Description of demographic characteristics of study participants

Variables	Categories	Rural (%)	Urban (%)	Total (%)	χ^2	*P*
Gender	Male	61 (61)	50 (50)	111 (55.5)	2.450	0.118
	Female	39 (39)	50 (50)	89 (44.5)		
Education	≤8th	77 (77)	70 (70)	147 (73.5)	2.986	0.225
	9th-12th	20 (20)	29 (29)	49 (24.5)		
	>12th	3 (3)	1 (1)	4 (2)		
Family type	Nuclear	66 (66)	58 (58)	124 (62)	1.358	0.244
	Joint	34 (34)	42 (42)	76 (38)		
Socioeconomic status	Upper	2 (2)	3 (3)	5 (2.5)	25.107	0.000
	Upper middle	8 (8)	30 (30)	38 (19)		
	Lower middle	43 (43)	48 (48)	91 (45.5)		
	Upper lower	33 (33)	13 (13)	46 (23)		
	Lower	14 (14)	6 (6)	20 (10)		
Family history of psychiatric illness	Present	8 (8)	3 (3)	11 (5.5)	2.405	0.121
	Absent	92 (92)	97 (97)	189 (94.5)		

Table 2: Prevalence of depression (Children's Depression Inventory >19) in relation to sociodemographic variables

Variables	Categories	Total subjects	Participants with CDI ≥19 (%)	χ^2	*P*
Gender	Male	111	12 (10.8)	2.738	0.098
	Female	89	17 (19.1)		
Education	≤8th	147	12 (8.16)	18.141	0.000*
	9th-12th	49	16 (32.65)		
	>12th	4	1 (25)		
Family type	Nuclear	124	13 (10.48)	4.245	0.039*
	Joint	76	16 (21.05)		
Socioeconomic status	Upper	5	1 (20)	3.312	0.507
	Upper middle	38	6 (15.79)		
	Lower middle	91	15 (16.48)		
	Upper lower	46	3 (6.52)		
	Lower	20	4 (20)		

*Denotes statistically significant. CDI: Children's Depression Inventory

Table 3: Prevalence of anxiety disorder (revised Children's Manifest Anxiety Scale >19) in relation to sociodemographic variables

Variables	Categories	Total subjects	Participants with RCMAS >19 (%)	χ^2	*P*
Gender	Male	111	11 (9.9)	5.069	0.024*
	Female	89	19 (21.3)		
Education	<8th	147	19 (12.92)	1.934	0.380
	9th-12th	49	10 (20.41)		
	>12th	4	1 (25)		
Family type	Nuclear	124	18 (14.52)	0.060	0.807
	Joint	76	12 (15.79)		
Socioeconomic status	Upper	5	1 (20)	3.333	0.504
	Upper middle	38	4 (10.53)		
	Lower middle	91	18 (19.78)		
	Upper lower	46	5 (10.87)		
	Lower	20	2 (10)		

*Denotes statistically significant. RCMAS: Revised Children's Manifest Anxiety Scale

area) had RCMAS score >19. This difference in the prevalence of anxiety among male and female children was statistically significant ($P = 0.024$). Maximum number of cases with anxiety, 19 out of 30, that is, 63.3%, were found in children studying in <8th class. There was no significant difference in anxiety prevalence between nuclear and joint family. Nearly 15.8% participants in joint family and 14.5% participants in nuclear family had anxiety disorder ($P = 0.807$). The maximum cases of anxiety, 18 out of 30, that is, 60%, were found in lower-middle socioeconomic group.

Discussion

This community-based, cross-sectional study assessed the prevalence of psychiatric disorders, specifically depressive disorders and anxiety disorders (as per ICD-10), in rural and suburban areas of Varanasi district of eastern Uttar Pradesh. Community acts as a good pool for sample collection because it contains the total residing population of children. Tikari and Sunderpur of Varanasi were chosen as the study areas for rural and suburban population, respectively, as sociodemographic structure of Tikari and Sunderpur are representative of rural and urban slums of Varanasi, respectively. The age group of 11–18 years in this study covered maximum proportion of adolescents in both rural and suburban areas.

In the present study, 29 cases were diagnosed as suffering from depression with the prevalence rate of 14.5%. There was no significant difference in children of rural and suburban areas in terms of prevalence of depression ($P = 0.841$). These results are similar to those seen in the previous studies.[8,13] Although in a recent study by Satyanarayana *et al.*, urban population was significantly more affected by depression and anxiety than rural population.[14] In a meta-analysis, Sajjadi *et al.* also found the prevalence of children and adolescent depression to be 13.05% using CDI.[15] In this study, 89.65% cases with positive CDI scores (26 out of 29) were in the age group of 14–17 years. This may be because as age advances, child's understanding of the symptoms was increased, and they are better able to report about their emotional state. Similar results of higher psychological problems in middle adolescence were also found in other previous studies.[13,16] In our study, more females (19.1%) were affected by depression as compared to males (10.8%), though this difference was not statistically significant. Other studies have also shown a strong female preponderance in the prevalence of depression in adolescents.[15,17-19] It has also been stated that after reaching puberty, there is a sharp rise in psychological problems in girls.[17]

Maximum number of cases with depression (55.17%) was found in children studying in 9th–12th class. This may be due to increased pressure of studies in higher classes. Bhasin *et al.*[20] have also found that stress levels were significantly higher among the "board classes," that is, 10th and 12th as compared to the classes 9th and 11th. In our study, children in joint families had significantly higher prevalence of depression (21.05%) than those in nuclear families (10.48%). This finding was similar to that made by Chhabra and Sodhi[16] but in contrast to the observations made by Singh *et al.*,[21] who found that stress was more among adolescents belonging to nuclear families. Sources of stress in the family can be death of a parent, conflicts with parents or siblings, mental illness in the family, parental alcoholism, and parental disharmony.[22] Among the different socioeconomic groups, maximum cases of depression (51.7%) were found in the lower-middle socioeconomic group. Costello *et al.* found that low income was associated with higher depression and other disorders in children, with the poorest children having over three times greater prevalence for any disorder.[23] These findings suggest that socioeconomic status exerts a considerable influence on the development of depression and other disorders.

Epidemiological studies have suggested that the prevalence rate for anxiety disorder vary from 5% to 17% among children and adolescents.[24] The prevalence of anxiety disorder in our study was 15%. There was no significant difference in rural and suburban areas in terms of prevalence of anxiety disorder ($P = 0.428$). In contrast, exceptionally raised prevalence was observed in a study

published in the British Journal of Psychiatry[25] where 54.1% Indian adolescents, reported anxiety problem. Such a wide range of prevalence may be the results of variation in diagnostic criteria adopted for the study. However, few studies have reported a much lower prevalence rate of anxiety disorders.[8,26] This difference may be due to age group difference; in the present study, the sample was taken in range of 11–18 years which is the most vulnerable group for stress and development of anxiety disorders. Out of the 30 children suffering from anxiety disorder in this study, 46.67% children were in the age group of 15–17 years. Deb *et al.* also found maximum anxiety in children aged 13–17 years.[27] Increased anxiety in middle adolescence can be a consequence of puberty, peer pressure, or pressure of studies.

The prevalence of anxiety was significantly higher among females (21.3%) than males (9.9%) and females. Similar to the current study, several studies have shown higher incidences in females than males.[25,26,28] This disparity might be present as a result of certain biological factors, hormonal factors as well as differences in experiences during childhood and adolescent.[29] In contrast to results seen with depression, maximum number of cases with anxiety (63.3%) were found in children studying in <8th class. This may be due to the changes in the personality of a child which occur due to puberty around this age. There was no significant difference in anxiety prevalence between nuclear and joint family. Similar to depression, lower-middle socioeconomic group showed the maximum cases of anxiety (60%). A cross-sectional study by Deb *et al.*,[27] also found that adolescents belonging to the middle socioeconomic group were more anxious than those from both high- and low-socioeconomic groups.[27]

There were few limitations in this study. A larger sample size over a larger geographical area would have been desirable. Longitudinal study to find out the course and pattern of their disorder is desirable. As this was a screening study, the severity of depressive disorders and types of anxiety disorder was not studied in detail. The prevalence of subthreshold depression and anxiety also needs to be addressed in the future studies. However, this study is an endeavor to determine the prevalence of the psychiatric problems (especially depression and anxiety disorders) in suburban and rural setup. This study can be used as a pilot project for future larger community and school-based studies to assess psychiatric morbidity among adolescents.

Conclusion

Within the limitations of this study, we conclude that, in the age group 11–18 years, 14.5% children suffer from depression, whereas 15% children suffer from anxiety disorder. It is imperative to carry out these types of epidemiological surveys to understand the burden of depression and anxiety in adolescents. The results of the study have implications in clinical training, practice and policy initiatives, integrating mental health into general health care, networking between mental health professionals and other health professionals, community-based health services, and involvement of professionals from the education sector.

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Conflicts of interest

There are no conflicts of interest.

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