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Original Article

Prevalence of depressive symptoms among urban adolescents in South India*

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Abstract

Aim: This study aimed to find the prevalence of depressive symptoms among adolescents studying in schools in Chennai. **Settings and Design:** The study was a school based cross sectional survey in which data were collected through a self administered questionnaire from adolescents studying in classes X, XI and XII. **Material:** Beck Depression Inventory (BDI) was administered to nine hundred and sixty four adolescents – boys (n=509) girls (n=455) – studying in twenty one schools spread across the city. **Results:** Based on the cut-off scores, 378 adolescents (39.2%) were found to be non-depressed, 358 (37.1%) were mildly depressed, 187 (19.4%) were moderately depressed and 41 (4.3%) severely depressed. In the present sample of adolescents, among the 21 depressive symptoms in the BDI, experience of emotional manifestations of depression like sadness, irritability, self-accusations and crying spells dominated over cognitive, behavioral and physical manifestations of depression There were no significant gender differences but a higher proportion of girls (27%) reported moderate to severe depression than boys (21%). There was an association between age and depression with increasing depression in older adolescents. **Conclusion:** Individual symptoms of depression and depressed mood are common in adolescents. Depressive symptoms are an unrecognized problem among adolescents that necessitates the need for recognition. Thus, understanding the prevalence of adolescent depressive symptoms is important for developing appropriate screening strategies, treatment planning, follow-up for those small proportion of adolescents who could become clinically depressed. Current poor understanding of the factors that influence depressive symptoms makes these efforts challenging.

Key-words: prevalence, depressive symptoms, adolescents

Introduction

Depression is a disorder that is defined by certain emotional, behavioral and thought patterns. Petersen and colleagues [1] defined adolescent depression at three levels: (1) depressed mood, (2) depressive syndrome, and (3) clinical depression. Depressed mood is sadness at various times in response to an unhappy situation. Depressive syndrome is experiencing anxiety with other symptoms such as feeling sad, lonely, unloved and worthless. Clinical depression is manifestation of five or more depressive symptoms lasting continuously for two weeks and impairing current functioning. Depression is under recognized among adolescents because depressive symptoms are considered a familiar part of adolescent experience [2]. Depressed mood that is stable across at least 3 years of adolescence is indicative of adult depression and other psychological difficulties[3] .

Studies conducted using community and school samples of adolescents have shown depression as the most common psychiatric disorder among adolescents [4, 5] and have shown varying estimates due to differences in methods, and criteria used to diagnose depression. Studies in the last decade have shown the rates of depression in adolescents to range from 8% to above 20% [6-8] and associated with suicide, other psychiatric co-morbidity, academic failure, poor peer relationships, substance abuse and severe depression during adulthood [4] . There have only been a few reported studies on depression per se among the adolescent population in India. Psychiatric morbidity among school samples of adolescents was found in about 29% of girls and 23% of boys with depression being the most common disorder [9]. In another study [10], 15% of school adolescents screened with Beck Depression Inventory (BDI) scored for depression. A study that specifically assessed depression reported a prevalence of 3% in 13-19 year old school going [11] adolescents. Moreover, depression during adolescence is associated often with suicide, a phenomenon that is also on the rise among adolescents in India in recent times [12 13].

One way of addressing the issue of depression among adolescents in India is conducting studies that give an estimate of proportion of adolescents who experience depressive symptomatology at a given time. Such studies will reflect the mental health status of adolescents and can play an important part in determining and planning the kinds of services and mental health interventions required.

This study aimed to estimate the prevalence and correlates of depressive symptoms in adolescents studying in private schools in the metropolitan city of Chennai in Southern India. This paper discusses the prevalence and the relationship between depressive symptoms to the socio-demographic variables of gender and age.

Methods

Design and Setting

This cross sectional study was carried out among adolescents studying in classes X, XI and XII in various private schools in the city of Chennai. There are about six hundred schools in Chennai following different patterns of education namely the Matriculation Board of Education, Anglo-Indian Board of Education, the Tamil Nadu State Board of Education, the Indian Council of Secondary Education (ICSE), Central Board of Secondary Education (CBSE). Except the schools that follow the Central Board of Secondary Education (CBSE) and Indian Council for Secondary Education (ICSE) pattern of education, the Directorate of Public Instructions (DPI) is the regulatory commission that governs the functioning of all schools, both public and private in the state of Tamil Nadu. Out of the 600 schools in Chennai 377 schools follow the Matriculation pattern of education where this study was carried out. Matriculation pattern of education is a popular system in Tamil Nadu and many parents send their children to these schools. The Directorate of Public Instructions (DPI) has categorized the 377 matriculation schools by 23 geographical zones. Each zone has schools ranging from twelve to twenty four in number. The schools in each zone are more or less similar in background with respect to facilities available and the economic status of the students attending these schools. The Beck Depression Inventory (BDI) was distributed to each student in the class room, and they were asked to respond to each of the items. Consent was obtained from the head of the school and oral consent was obtained from all students.

Sample size and sampling

Previous study[10] had estimated the prevalence of depression among adolescents close to 14%. Assuming a prevalence of 15%, at precision 5% with a 95% confidence interval, the adjusted sample size was estimated at a minimum of 400 adolescents. Since the school zones fall under North and South Chennai, 800 adolescents was the minimum sample required. Two stage sampling procedure was followed using the random sampling technique. In the first stage, one school each from the 23 zones was selected by lottery method. By this method, 10 schools located in North Chennai and 13 schools located in South Chennai were selected. During the second stage, one class of students studying in 10th, 11th or 12th class from 23 schools was approached for participation in the study. As each class had more than one division, the selection of the particular division was based on the recommendation of the Principal of the respective schools. This was primarily based on availability and convenience of the school administration.

Measure

Beck Depression Inventory (BDI): The BDI evaluates 21 symptoms of depression that assesses cognitive, behavioral, affective, and somatic component of depression. The cut-offs for the various categories of depression were 0-9 no depression, 10-19-mlid depression, 20-29-moderate depression, above 30-severe depression [14]. The test-re-test reliability and internal consistency in the present study was found to be .82 and .79 respectively.

Statistical Analyses

Analysis was done using the SPSS version 11. Frequency distribution of individual items in the BDI was done to find the symptoms that were experienced by higher proportion of adolescents in this sample. Chi-square test was carried out to determine associations between depression and socio-demographic variables like age, gender, family type, family structure and class of study. The adolescents were grouped into two groups for the chi-square analyses. All adolescents who scored for mild, moderate and severe depression formed the 'depression group'

Results

A total of 964 adolescents from the 21 schools (2 schools refused to give permission) were finally included for analysis (excluding 32 students who had submitted incomplete information on the questionnaires). Of these 53% were boys (n = 509) and 47 % girls (n = 455). The students ranged in age from 14 - 18 yrs (mean age15.6). Greater proportion of adolescents was aged 16 years (372; 38.6%). Adolescents aged 15 years constituted 28.7% (277) and those aged 17 year constituted 17.6% (170) of the sample. The proportion of adolescents aged 14 (12.4%) and 18 years (1.9%) was comparatively low. About 34 % were studying in class X, 38.7% in class XI and 27% in class XII. The majority (93%) of the adolescents came from intact families. In this sample 75% lived in nuclear families, 17% lived in joint families and close to 8% lived in extended families. Of the 964 adolescents who completed the BDI, 378 (39.2%) presented with 'no depression'. Mild depression was found in 358 (37.1%) adolescents. The number of adolescents who reported moderate depression was 187 (19.4%) and severe depression was 41 (4.3%). Thus a total of 228 (23.7%) adolescents presented with moderate to severe depression.

Table 1: Frequency & Severity of Depressive Symptoms (BDI)

	None	Mild	Moderate	Severe	Mean (SD)
1. Sadness	226 (23%)	611 (63%)	64 (7%)	63 (6.2%)	.96 (.75)
2. Pessimism	607 (63%)	264 (27%)	59 (6%)	34 (4%)	.50 (.76)
3. Sense of failure	610 (63%)	228 (24%)	97 (10%)	29 (3%)	.53 (.79)
4. Dissatisfaction	491 (51%)	293 (31%)	128 (13)	53 (6%)	.74 (.89)
6. Guilt	422 (44%)	393 (41%)	115 (12%)	34 (4%)	.75 (.79)
7. Expectation of punishment	403 (42%)	392 (41%)	81 (8%)	86 (9%)	.85 (.91)
8. Self dislike	515 (53%)	315 (33%)	50 (5%)	84 (9%)	.69 (.91)
9. Self Accusations	374 (39%)	307 (325)	218 (23%)	65 (7%)	.97 (.93)

10. Suicidal thoughts	721 (75%)	176 (18%)	35 (4%)	32 (3%)	.37 (.71)
11. Crying spells	617 (64%)	193 (20%)	26 (3%)	128 (13%)	.65 (1.0)
12. Irritability	331 (35%)	489 (51%)	86 (9%)	55 (6%)	.86 (.80)
13. Social withdrawal	500 (52%)	343 (36%)	78 (8%)	43 (5%)	.65 (.80)
14. Indecisiveness	494 (51%)	220 (23%)	200 (21%)	50 (5%)	.79 (.93)
15. Body image change	685 (71%)	119 (12.4%)	83 (9%)	77 (8%)	.53 (.94)
16. Work difficulty	392 (41%)	367 (38%)	178 (18.4%)	27 (3%)	.83 (.82)
17. Sleep disturbance	613(63%)	247 (26%)	70 (7%)	34 (4%)	.51 (.77)
18. Fatigability	448 (46.4%)	398 (32%)	83 (9%)	35 (4%)	.69 (.77)
19. Anorexia	608 (63%)	233 (24.4%)	70 (7%)	53 (6%)	.55 (.84)
20. Somatic preoccupation	525 (54.4%)	334 (35%)	64 (7%)	41 (4%)	.26 (.58)

21. Loss of Libido	536 (68%)	126 (16%)	65 (8%)	57 (7%)	.59 (1.0)

BDI – Beck Depression Inventory

To understand the reported intensity of each symptom in the BDI, the frequency, percentage, mean and standard deviation of each symptom and its intensity was calculated (Table 1). The results show a high mean for symptoms like sadness (.96), self-accusation (.97), irritability (.86), expectation of punishment (.85) and work difficulty (.83). Out of the 21 symptoms of depression, more than 50% of the sample indicated not experiencing 14 symptoms in the BDI. They were 'pessimism, sense of failure, dissatisfaction, self-dislike, suicidal thoughts, crying spells, social withdrawal, indecisiveness, body image change, sleep disturbances, anorexia, weight loss, somatic preoccupation and loss of libido'. However, with respect to the remaining 7 symptoms, more than 50% of the sample reported mild to severe depression. Majority (63%) of the boys and girls in the present sample reported mild "sadness" followed by 'irritability (489; 51%). In the moderate category, self accusation (218, 23%), indecisiveness (200; 21 %;) and work difficulty (178; 18 %) were endorsed by a greater number of adolescents. In the severe category, crying spells were endorsed by more than 10% (128) of the sample and expectation of punishment was reported by 86 (9%) boys and girls.

Table 2: Age and Severity of Depressive Symptoms

Age (yrs)	BDI *(Mean & SD)*	None n (%)	Mild n (%)	Moderate n (%)	Severe n (%)
14	13.5 (8.9)	55 (43.6%)	38 (30%)	26 (20.6%)	7 (4%)
15	13 (8.0)	130 (47%)	92 (33.2%)	44 (16%)	11 (4%)
16	14 (8.0)	138 (37%)	139 (37%)	80 (29%)	15 (5.4%)
17	15 (7.3)	47 (28%)	84 (49%)	33 (19%)	6 (4%)
18	17 (8.6)	3 (16%)	10 (53%)	4 (21%)	2 (10%)

Table 3: Age and Depressive Symptoms

Age	No depression	Depression	p value
14	55 (44%)	71 (56%)	
15	130 (47%)	147 (53%)	
16	138 (37%)	234 (63%)	0.001*
17	47 (28%)	123 (72%)	
18	3 (16%)	16 (84%)	

(*X2 analysis***) *p<.01**

The mean scores on BDI by age and percentage of participants by age experiencing none to severe depression is presented in Table 2. The chi-square test of association showed that depression was significantly associated with age (χ^2= 3.8; df=4; p<.01). With an increase in age there was a gradual shift in the percentage of adolescents from the 'no depression' category to one of increasing severity of depression. Though there was an increase in the mean scores from ages 15 onwards, there was a small decline in the percentage of adolescents with respect to severity of depression by age 15. This however, increased by age 16 followed by a decrease at age 17 and another rise at 18.

Table 4: Gender and Depressive Symptoms

Gender	BDI (*Mean & SD)*	None	Mild	Moderate	Severe
Boys (509)	13.15 (7.6)	206 (40.5%)	198 (38.9%)	85 (16.7%)	20 (3.9%)
Girls (455)	14.29 (8.6)	172 (37.8%)	160 (35.2%)	102 (22.4%)	21 (4.6%)

Table 4 presents the percentage of boys and girls experiencing depression by its categories. The mean scores of boys and girls show that girls experience more depressive symptoms than boys. Except in the mild category, girls outnumbered boys in the moderate and severe category of depression. A total of 206 (40.5%) boys were in the depression group and 303 (59.5%) were in the no depression group. Among girls, 172 (38%) were in the no depression group and 283 (62%) girls were under the depression group. Though, the mean scores of BDI were higher for girls, chi-square analysis of association between gender and depression did not emerge significant for the current sample of boys and girls (χ^2= 3.0; df=1; p=.08).

Other socio demographic factors like family structure, family type and class of study did not correlate significantly with depression.

Discussion

The findings from this study give us an estimate of the proportion of adolescents experiencing depressive symptoms indicating that many adolescents experience depressive symptoms. The mean BDI score of 13.7 were higher than scores reported in other studies (range from 8.5 to 12).[15-18]

When compared based on categorization of depression, the differences were in the moderate to severe categories. The percentage of adolescent who scored in the moderate to severe category ranged from 30% -32% in earlier studies [15, 19] where as in our study 24% scored in the moderate to severe categories of depression. The results of the present study lend confirmation to some what closer similarities and dissimilarities to mean scores and severity of depression among adolescents. The results show that though there can be no direct comparison of prevalence, nevertheless, we get an understanding that a greater proportion of adolescents are experiencing depressive symptoms which is a cause for concern.

One way of analysing depression is by its emotional, cognitive, motivational and physical manifestations[20]. Based on the above four manifestations, 7 out of the 21 symptoms of depression in the BDI were endorsed by more than 50% of the adolescents who were distributed across the mild, moderate and severe categories. Mild sadness was reported by a fairly large proportion (63%) followed by irritability (51%)**.** With respect to symptoms under the 'moderate intensity' category, self-accusation (23%), indecisiveness (21%) and work difficulty (18%) were reported by about 20% of the adolescents. This included both the emotional and cognitive manifestations of depression. In the severe category, crying spells and expectation of punished were symptoms that were endorsed by 10% of adolescents in this sample. Thus, emotional manifestations dominated the cognitive, physical and motivational symptoms of depression in this sample. The results show that adolescents who exhibit such symptoms should be carefully observed and followed up in order to prevent depressive episodes from occurring in the future.

Age and its relationship to depression

There was a significant association between age and depression in this sample of adolescents. Adolescents aged 15 had the lowest mean scores and adolescents aged 18 had the highest mean scores. In line with other studies [8, 16, 21] the present study showed that older adolescents were experiencing more depressive symptoms than younger adolescents. There was an increase in the proportion of students from the mild to the severe categories as age increased, although there was a reduction in proportion of students aged 15 years, in the moderate depression category. This was followed by an increase in the proportion of students aged 16 years in the moderate and severe categories. Around age 16, most of the adolescents are in their 11th class and this is the major transition from high school to the secondary school. Adolescents may experience more stress coping with the transition and also other stressors like peer influence, increasing autonomy, independence from family and difficulties in social adjustment. This finding will need to be examined carefully and confirmed by further studies because there seems to be some fluctuations.

Gender and its relationship to depression

The lack of gender difference was a surprise. There have been many studies carried out with adolescents and adult populations with respect to gender and depression. While some studies [12, 22,23] found no gender differences in their sample of adolescents, similar to the present study, there have been others that have shown females to be more depressed than males [6-,8,16,21,24]. Studies that have tried to explain these gender differences have reported that psychosocial resources like self-esteem and mastery, responsiveness to stressors and parental interactions influence psychological health in adolescents. Variables like self-esteem, mastery and coping [25] have been found to be stronger in boys than girls therefore explaining their better ability to cope with depression. However, these psychosocial variables need to be more carefully studied to understand its application to Indian adolescent boys and girls. Besides, Compas et al., [25] had suggested that gender differences in depressive symptoms is evident in children and adolescents referred to mental health services only and not in community samples of adolescent boys and girls. If we analyse the lack of gender difference in the current Indian context, urban Indian cities are going through many changes both in social relationships and economic independence. Globalization has made available many opportunities for the youth of today which to a large extent is fairly equal irrespective of gender. In the past few years, adolescent girls have consistently performed better than boys, academically, in the final schooling year examinations. Many parents also

encourage their daughters to compete in almost all spheres thereby, giving young girls more opportunities for growth. This gives a scope for high self-esteem, good problem solving strategies contributing to their ability to cope with life better. The lack of gender difference is also noted by Nolen-Hoeksema [26] who reported that the 2:1 (female to male) ratio of depression existed in developed countries and no significant difference in developing countries. Further studies need to be carried out to corroborate this finding.

The main limitation of the study was the absence of an external criterion like a clinical examination against which the validity of the self-report measures could be judged. Obtaining additional information from other sources like parents and teachers would have enhanced validity.

Conclusion

This study has shown a high level of depressive symptoms in a school sample of adolescents in a south Indian city. Considering that 24% of adolescents in this study reported moderate to severe depression, it is understood that a considerable number of adolescents are experiencing turmoil during this phase. This could result in further problems like poor academic performance, poor coping methods and suicidal ideations. This finding emphasizes the need for screening for depressive symptomatology and identifying adolescents who need further intervention. Similar studies like the current one could pave the way for school-based interventions that may help adolescents with mild and moderate depressive symptoms which in turn could minimize the risk for progression into other serious problems like drug abuse, suicide and violence.

References

1. Petersen AC, Compas BE, Brooks-Gunn J, Stemmler M, Ey S, &Grant KE. Depression in adolescence. American Psychologist 1993; 48, 155-168.
2. Steinberg LD. Adolescence. 5th ed. New York: McGraw –Hill
3. Devine D, Kempton T and Forehand R. Adolescent depressed mood and young adult functioning; A longitudinal study. Journal of Abnormal Psychology 1994; 22: 629-640
4. Lewinsohn PM, Hops H, Roberts RE, Seeley JR and Andrews JA. Adolescent psychopathology. Prevalence and incidence of depression and other DSM III disorders in high school students. Journal of Abnormal Psychology 1993; 102:133-144.
5. Reynolds WM. Depression in children and adolescents. In, Reynolds WM (Ed). Internalizing disorders in children and adolescents. New York, Wiley and Sons, 1992; 149-243.
6. Steinhausen HC, Metzke CW. Adolescent self-rated depressive symptoms in a Swiss epidemiological study. Journal of Youth and Adolescence 2000; 29: 427-437.
7. Bahls CS. Epidemiology of depressive symptoms in adolescents of a public school in Curitiba, Brazil. Revista Brasileira de psiquiatria 2002; 24.
8. Gorenstein C, Andrade L, Zanola E, Artes, R. Expression of depressive symptoms in a nonclinical Brazilian adolescent sample. The Canadian Journal of Psychiatry 2005; 50: 129-137.

9. Sidana A, Nijhawan M. Prevalence of psychiatric morbidity in school going adolescent children and factors related. Indian psychiatric society. Paper presented at the 51st Annual National Conference of the Indian Psychiatric society. Indian Journal of Psychiatry 1999; supplement.
10. Chakraborty N, Mehra G, Dracas S, Quadros T, Parikh R. Depression in a population of adolescent students. Paper presented at the 53rd Annual National Conference of the Indian Psychiatric Society. Indian Journal of Psychiatry. 2001; supplement.
11. Nair MK, Paul MK.John. Prevalence of depression among adolescents. Indian J Pediatrics 2004;71:523-524
12. Sanjeev L, Sharma GA, Kabra SK, Shalini G, Dogra TD. Suicide among children and adolescents in South Delhi. Indian Journal of Pediatrics 2004; 71: 701-703.
13. Aaron R, Joseph A, Abraham S, Muliyil J, George K, Prasad J. Suicides in young people in rural southern India. The Lancet 2004; 363: 111-118.
14. Beck AT, Steer RA, Garbin MG. Psychometric Properties of the Beck Depression Inventory: twenty five years of evaluation. Clin Psychol Rev 1988; 8: 77-100.
15. Teri L. The use of the Beck Depression Inventory with adolescents. Journal of Abnormal Child Psychology 1982b; 10:277-284.
16. Brian C, David, J, Lan, DRB, Stove M, Edward GB. The prevalence of depression in a high school population. Adolescence 1993; 28:149-158.
17. Baron P and Perron H. Sex differences in the Beck Depression Inventory scores of depression. Journal of Youth and Adolescence 1986;15(2): 165-171
18. Sullivan WO and Engin AW. Adolescent depression: Its prevalence in high school students. Journal of School Psychology 1986; 24:103-109.
19. Bahls. Saint-Clair. Epidemiology of depressive symptoms in adolescents of a public school in Curitiba, Brazil. Rev. Bras. de Psiquiatr 2002; 24 (2):63-67
20. Chartier G and Ranieri D. Adolescent depression concepts, treatments, prevention. In, Steinberg L (Ed). Adolescence, Mc Graw Hill, 1984; 221-223.
21. Schraedley PK,Gotlib IH, Hayward C. Gender differences in correlates of depressive symptoms in adolescents. Journal of Adolescent Health 1999; 25:98.-108.
22. Culp AD, Clyman MM, Culp RE. Adolescent depressed mood, reports of suicide attempts and asking for help. Adolescence 1995; 30:827-837
23. Masten WG, Jerome WW, Mosby L, Caldwell-Colbert AT, WilliamsV, Barrios Y. Gender Differences in Depressive Symptoms among Mexican Adolescents. Anales de Psicología 2003; 19:91-95.
24. Avison WR, McAlpine DD. Gender differences in symptoms of depression among adolescents. Journal of Health and Social Behaviour 1992; 33:77-96.
25. Compas BE, Oppedisano G, Connor JK et al. Gender differences in depressive symptoms in adolescence: Comparison of national samples of clinically and non-referred youths. Journal of Consulting Clinical Psychology 1997;65:617-626
26. Nolen-Hoeksema S. An interactive model for the emergence of gender differences in adolescence. Journal of Research in Adolescence 1994; 4:519-534

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