Journal of Academia and Industrial Research (JAIR)
Volume 3, Issue 6 November 2014

ISSN: 2278-5213

RESEARCH ARTICLE

Prevalence of Depression among School Children aged 15 years and above in a Public School in Noida, Uttar Pradesh

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Abstract

About 8% of children and adolescents suffer from depression and 11% of adolescents have a depressive disorder by the age of 18 years according to the National Co-morbidity Survey-Adolescent Supplement. This study has been conducted to estimate the prevalence of depression among adolescents studying in public schools in Noida in order to find out a relationship if any with different socio-economic and demographic factors. Cross-sectional study using simple screening instruments along with anthropometric measurements for detecting symptoms of depression in adolescents, two psychological instruments i.e. PRIME-MD PHQ-9 and perceived stress scale were used. Information on socio-demographic factors, activities undertaken to avoid depression and methods to relieve depression were collected using semi-structured questionnaires. Statistical analysis was done with Chi-square test using SPSS 17. Prevalence of depression was observed to be 38% among the study subjects in the age groups of 16 and 18 years. Males (35%) were found less depressed as compared to the females (41.8%). Association of frequency of going out for outing, extracurricular activities and type of activities and depression were statistically significant. Highest prevalence of depression was seen in obese (48.7%) study subjects. A statistically significant association was found between BMI and depression (P<0.003). Majority of study subjects (36.6%) had consulted their parents, while 33% of study subjects had consulted their friends. Majority of study subjects (64.4%) listen to music to relieve depression which was statistically significant (P<0.001). The study highlights the common but ignored problem of depression in adolescence. The teachers and parents should be made aware of this problem with the help of school counselors so that the depressed adolescent can be identified early and helped rather than suffer silently.

Keywords: Depression, adolescents, extracurricular activities, Chi-square test, school counselors.

Introduction

Depression is a mental disorder that presents with depressed mood, loss of interest or pleasure, feelings of guilt or low self-worth, disturbed sleep or appetite, low energy and poor concentration. Depression in childhood and adolescence may be similar to adult major depressive disorder, although younger sufferers may exhibit increased irritability or aggressive and self-destructive behaviours, rather than the all-encompassing sadness associated with adult forms of depression (Birmaher *et al.,* 1996). Petersen *et al.* (1993) 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. The prevalence of depression is increasing in successive generations with onset at earlier ages. About 8% of children and adolescents suffer from depression (Valsamma and Rudi, 2012). Although Cash (2004) stated that adolescent and adult females were diagnosed with a depressive disorder twice as often as males, boys up to age 12 are as likely to suffer from depression as girls. About 11% adolescents have a depressive disorder by the age of 18 years according to the National Co-morbidity Survey-Adolescent Supplement (NCS-A). The research done by Kovacs *et al*. (1984) had suggested that the prevalence of young depression sufferers in Western cultures ranges from 1.9-3.4% among primary school children and 3.2-8.9% among adolescents. It has also found that among children diagnosed with a depressive episode, there is a 70% rate of recurrence within five years. Like their adult counterparts, children and adolescent depression sufferers are at an increased risk of attempting or committing suicide. In the 1990s, the National Institute of Medical Health found that up to 7% of adolescents who develop major depressive disorder may commit suicide as young adults (Weissman *et al.,* 1999). Studies in the last decade have shown the rates of depression in adolescents to range from 8% to above 20% (Steinhausen and Metze, 2000; Bahls, 2000; Gorenstein

et al., 2005) and associated with suicide, other psychiatric co-morbidity, academic failure, poor peer relationships, substance abuse and severe depression during adulthood (Lewinsohn *et al.,* 1993). Till date, there are only few reported studies over depression among adolescents in India. A study done by Nair *et al.* (2004) that specifically assessed depression reported a prevalence of 3% in 13-19 year old school going adolescents. 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 (Sidana and Nijhawan, 1999). However, depression during adolescence is associated often with suicide; a phenomenon that is also on the rise among adolescents in India in recent times (Sanjeev *et al.,* 2004). On this backdrop, this study has been conducted to estimate the prevalence of depression among adolescents studying in public schools in Noida in order to find out a relationship if any with different socio-economic and demographic factors.

Materials and methods

Study population: The present study was a cross-sectional study carried out in a public school situated in New Okhla Industrial Development area Noida of Uttar Pradesh using simple screening instruments for detecting early symptoms of depression among adolescents over a period of 2 months in April and May, 2011. A total of 800 students studying in class IX to class XII constituted the study population. All of these four classes consisted of 20 sections and each section was containing around 40 students. Out of these, only 400 students were selected in the study by systematic random sampling method by including 20 students from each section. A list of students was prepared for each section and the first student was selected randomly from each section. Forty students who had been either absent or not willing to participate were excluded from the study. Thus, 360 students were included who returned completely filled performa.

Questionnaire: Initially, the purpose of study was explained to them. The pre-tested semi-structured questionnaires were given in the class and students were instructed how to fill them in English. The questionnaire comprised of the questions pertaining to (1) identification data, (2) depressive symptoms measured by PRIME-MD PHQ-9 and the stress which was measured by using Perceived Stress Scale. After filling of the forms, anthropometric measurements were taken separately for each student as per "Step 2–physical measures" described in WHO stepwise approach to NCD surveillance.

Data collection: Weight was recorded to the nearest 200 g, whereas the height was recorded to the nearest half centimetre (0.5 cm). The waist circumference was measured at the level halfway between the iliac crest and the coastal margin in the mid axillary line to the nearest half centimetre (0.5 cm). Abdominal obesity was considered if waist circumference was observed to be >85 cm in girls and >90 cm in boys. The hip circumference was also measured in centimetres with the subject in the standing position, with both feet together with light clothing. The measurement for hip circumference was taken at the level of greater trochanters or at the level of the largest horizontal girth around the buttocks. The tape was kept close enough to allow the observer to place one finger between the tape and the body. Waist hip ratio was calculated by the following formula: WHR = waist circumference (cm)/hip circumference (cm). Truncal obesity was diagnosed when WHR is >0.95 in men and >0.83 in women. Body mass index (Quetlet's Index) was calculated by the following formula: BMI = weight (in kg)/height (in m^2). Then, all the subjects were classified according to BMI scores. Data from the questionnaires was entered in MS-Excel and analyzed using SPSS 17 software. Chi-square test was applied wherever required to find out any significance in the differences.

Ethical aspects: Approval from institutional ethics committee was taken. The purpose of the study was explained to the participants before they were included in the study. The participants were assured about privacy and confidentiality of the information provided by them. The informed consent was taken for the study from all participants.

Results

Among 360 students, there were 209(58.1%) males and 151(41.9%) females. Of these, 213(59.1%) were aged 15 years, 114(31.6%) aged 16 years and 33(9.3%) aged 17 years. The mean age of study subjects was observed to be 15.5±0.6 years. The parents of study subjects, majority of fathers (84.7%) and mothers (81.6%) were post graduate whereas, 15.2% of fathers and 18.3% of mothers were having graduate degree. More than half of the study subjects' fathers (54.7%) were in govt./private jobs followed by those in business (35.5%), whereas among their mothers, only 43.6% were in govt./private jobs. Approximately half of mothers (47.5%) were housewives or doing nothing. Some of the fathers (9.7%) and mothers (2.7%) were employed in the occupations like private practice and home based selling of products. Out of 360, only 144 study subjects answered the question regarding their family income i.e. they had the annual mean income of 29.45±0.5 lakhs.

Table 1. Prevalence of depression (N=360).

Status of depression (score)	Number	Percentage
Subjects screened	360	100.00
No depression (0-4)	224	62.00
Depression present	136	38.00
Mild(5-9)	103	75.73
Moderate (10-14)	32	23.52
Moderately severe (15-19)	1	0.01

Table 2. Socio-demographic features affecting depression (N=360).

Socio-demographic features	No depression (n=224) No.(%)	Depression present (n=136) No.(%)	Total (N=360) No.(%)	Chi-square test
Sex				
Male	136(65.07)	73(34.93)	209(58.05)	X^2 =1.56
Female	88(58.28)	63(41.72)	151(41.94)	P<0.096
Father's education				
Graduate	30(54.54)	25(45.46)	55(15.27)	X^2=1.62
Post graduate	194(63.61)	111(36.39)	305(84.72)	P<0.104
Mother's education				
Graduate	33(50.00)	33(50.00)	66(18.33)	X^2=1.76
Post graduate	191(64.97)	103(35.03)	294(81.66)	P<0.107
Occupation of father				
Job	119(60.40)	78(39.60)	197(54.72)	X^2=1.54
Business	80(62.50)	48(37.50)	128(35.55)	P<0.400
Others	25(71.43)	10(28.57)	35(09.72)	
Occupation of mother				
Job	94(59.87)	63(40.13)	157(43.61)	X^2=1.59
Business	19(86.36)	3(13.64)	22(06.11)	P<0.401
Not working	105(61.40)	66(38.60)	171(47.50)	
Others	6(60.00)	4(40.00)	10(02.77)	
Number of siblings				
None	32(58.18)	23(41.82)	55(15.27)	X^2=1.03
One	182(63.86)	103(36.14)	285(79.17)	P<0.502
Two	10(55.55)	8(44.45)	18(05.00)	
More than 2	0 (0.00)	2(100.00)	2 (0.56)	

Table 3. Obesity and depression (N=360).

Obesity (BMI)	Depression		Total N=360 No.(%)	Chi-square test (X^2 value, P value)
	No depression n=224(62%) No.(%)	Depression present n=136(38%) No.(%)		
Underweight (<18.5)	10(37.04)	17(62.96)	27(07.50)	
Normal (18.5-22.9)	134(68.37)	62(31.63)	196(54.44)	X^2=13.7
Overweight (23-27.5)	61(61.00)	39(39.00)	100(27.78)	P<0.003
Obese (>27.5)	19(51.35)	18(48.65)	37(10.28)	

Prevalence of depression: The overall prevalence of depression among study subjects was observed to be 38%. Majority of subjects (75.7%) were having mild depression followed by moderate depression (23.5%). Only 1 study subject was found to have moderately severe depression (Table 1). Male study subjects (35%) were depressed less as compared with the female study subjects (41.8%). However, there was no significant statistical association between depression and several socio demographic factors (Table 2). There was marginal variation in prevalence of depression with regard to the parent's education and occupation.

Risk factors: Table 3 presents that approximately one third (31.7%) of study subjects having BMI in normal range were found to have depression followed by 39% of study subjects who were overweight were depressed. Highest prevalence of depression was observed to be in obese i.e. 48.7% of study subjects. In the present study, it was observed that prevalence of depression was increased along with increase in BMI. A statistically significant association was found between BMI and depression (X^2 = 13.7, P<0.003).

Preventive action: Figure 1 presents that 36.6% of study subjects did not consult anyone when they are in depression. Rest of the study subjects (63.4%) did consult someone while in depression. Majority of study subjects (36.6%) consulted their parents while 33% of study subjects consulted their friends. Very few i.e. 12.2% consulted teachers or relatives. Activities undertaken to avoid depression is shown in Table 4. More than half of the study subjects i.e. 54.4% were in habit of going out for outing once a week followed by 32.5% were going out for once in 15 d. There was a positive statistical association (X^2=16.6, P<0.001) between depression and frequency of going out for outing. About 79.7% of study subjects were involved in extracurricular activities. Extracurricular activities and depression were statistically associated with each other (X^2=9, P<0.002). In the current study, the extracurricular activities seemed to keep depression away among the study subjects as more than half of the study subjects (54.4%) were involved in outdoor sports like football, badminton and basketball or indoor sports like chess and table tennis.

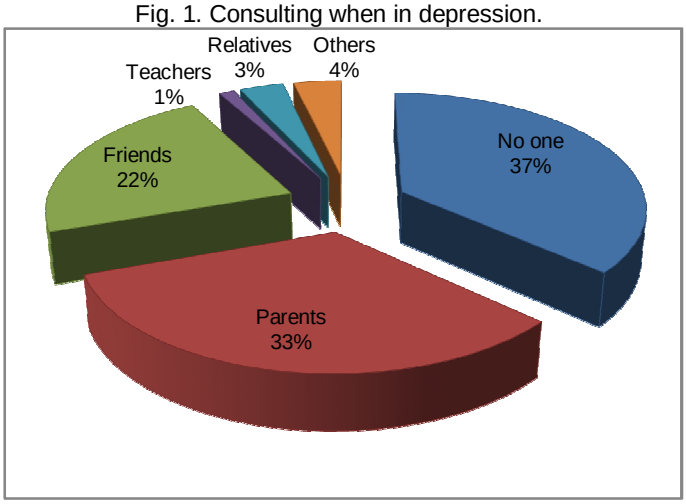
Table 4. Activities undertaken to avoid depression (N=360).

Activities undertaken to avoid depression	Depression			Chi square test (X^2 value, P value)
	No depression N=224(62%) No.(%)	Depression present N=136(38%) No.(%)	Total N=360 No.(%)	
Going out for outings				
Once a week	126(64.28)	70(35.72)	196(54.44)	X^2=16.6
Once in 15 d	81(69.23)	36(30.77)	117(32.50)	P<0.001
Once a month	11(39.28)	17(60.72)	28(07.78)	
Once in 6 months	6(31.58)	13(68.42)	19(05.28)	
Extra-curricular activities				
No	34(46.58)	39(53.42)	73(20.28)	X^2=9
Yes	190(66.20)	97(33.80)	287(79.72)	P<0.002
Activities				
Outdoor sports	120(71.86)	47(28.14)	167(46.38)	X^2=32
Indoor sports	8(27.59)	21(72.41)	29(08.05)	P<0.0001
Music/dance	39(60.00)	26(40.00)	65(18.05)	
Arts	4(66.67)	2(33.33)	6(01.66)	
Dramatics/robotics	19(95.00)	1(05.00)	20(05.56)	
Time spent with parents				
Few hours everyday	206(61.86)	127(38.14)	333(92.50)	X^2=0.52
Once a week	8(61.54)	5(38.46)	13(03.61)	P<0.701
Once in 15 d	10(71.43)	4(28.57)	14(03.89)	

Table 5. Methods adapted to relieve depression (N=360).

Relief of stress	Depression		Total N=360 No.(%)	Chi-square test (X^2 value, P value)
	No depression n=224(62%) No.(%)	Depression present n=136(38%) No.(%)		
Play sports	44(65.67)	23(34.33)	67(18.61)	X^2=19 P<0.001
Listen to music	131(56.47)	101(43.53)	232(64.44)	
Read a novel	25(89.29)	3(10.71)	28(07.78)	
Spend time with friends	13(59.09)	9(40.91)	22(06.11)	
Others (yoga etc.)	11(100.00)	0(0.00)	11(03.06)	

Fig. 1. Consulting when in depression.



Nearly two-thirds of study subjects (32.1%) participate in music, dance, art and dramatics. Chi-square analysis of association between type of activity and depression was emerged as significant (X^2=32, P<0.0001). It was observed that majority of study subjects (92.5%) spent at least a few hours of every day with their parents. Table 5 presents that all study subjects who engaged themselves in other ways of relieving depression like meditation and yoga were found not to be depressed.

Majority of study subjects who listen to music were not depressed followed by those were playing sports and reading a novel. Depression was statistically associated with methods adapted to relieve depression (X^2=19, P<0.001).

Discussion

In the present study, the prevalence of depression was found to be 38%. Most of the study subjects (75.7%) were found to be suffering from mild depression whereas, 23.5% subjects were moderately depressed. Only one student was found to have moderately severe depression. A study carried out by Bansal *et al*. (2009) showed lesser prevalence (18.4%) of depression among adolescents and 15.2% of them had evidence of distress. The difference between these studies could be due to the fact that the later was carried out in rural setting while the current study was carried out in urban settings where the atmosphere is much more competitive to score high in exams. Studies in USA have found that 3-9% of teenagers meet criteria for depression at any one time, and at the end of adolescence, as many as 20% of teenagers report a lifetime prevalence of depression (Zuckerbrot and Jensen, 2006). The reason for this could be early detection and better counseling services available for depression in USA.

Depression among the females was more (41.8%) as compared to that among males (35%). However, there was no statistical association between gender and depression. In a study by Mohanraj and Subbaiah (2010), females had higher prevalence (62%) than the males (40.5%). Studies that had tried to explain these gender differences had 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 had been found to be stronger in boys than girls. Thus, it was explaining their better ability to cope with depression. However, these psychosocial variables need to be more carefully studied to understand their applications on Indian adolescent boys and girls. Other socio-demographic factors hadn't been associated with depression significantly. Obesity seems to play a role in depression as in the present study, it was observed to be significantly associated with depression and with increase in the BMI, the prevalence of depression was also observed to be increased. Sjoberg *et al.* (2005) had also reported similar findings in their study group of aged adolescents between 15 and 17 years. Important measures taken by study subjects for relieving their depression were extra-curricular activities, frequently going out for outings and time spent with parents. However, the statistical association was observed to be with frequency of going out for outings and extra-curricular activities only. Majority of study subjects (74.7%) were involved in extra-curricular activities including several outdoor sports such as football, basketball and the indoor sports such as chess, table tennis. Several other methods were also adapted to relieve depression by other study subjects. Majority of study subjects (64.4%) were listening to music. Interestingly those who read novels, 89.3% of them were not depressed. There were some limitations of the study. One of them was the absence of an external criterion like a clinical examination by psychologist against which the validity of the self-report measures could be judged. Obtaining additional information from other sources like parents and teachers had enhanced validity; however, it was not obtained due to lack of time.

Conclusion

This study has shown a high level of depressive symptoms in a school sample of adolescents in Noida, UP. Considering that 38% of adolescents in this study reported 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.

Acknowledgements

This study is a "Short Term Student's" (STS) project supported financially by ICMR.

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