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A Cross Sectional Study on Depression disorders among higher secondary school students using Beck Depression Inventory (BDI) in India

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Abstract

A cross sectional study was conducted with a convenient sampling of 1225 students of 11 and 12th standard from the different four schools of Surat city during Aug-Sept 2015 by "Beck Depression Inventory (BDI)" scale to study the depression and suicidal tendency among higher secondary school students using Beck Depression Inventory (BDI). One third (33.6%) of the students had depressive symptoms according to the BDI scale. Out of which 15.1% were mildly depressive symptoms, 16.0% were moderately depressive symptoms 2.4% were severely depressive symptoms and 0.1% extremely depressive symptoms. Mother Education was independently affecting the mental health of children which was found statistically significant. Occupation of the family head was independently affecting the mental health of children which was found statistically significant. Occurrences of Depression is a multifactorial which depends upon several parameters & conditions in one's life. The commonest type of Depression is Moderate type for which instead of increasing in Age of child certain other parameters like Parent's education, occupation, socioeconomic status, family type & residential surroundings play a vital role. The religion & medium of education needs some more evidences for consideration.

Introduction

Adolescents aged between 10 to 19 years account for more than one-fifth of the world's population (United Nations, 2008). India has the largest national population of adolescents (243 million), followed by China (207 million), United States (44 million), Indonesia and Pakistan (both 41 million) (United Nations, 2012). In India, this age group forms 21.4% of the total population. Moreover, it is necessary to invest in adolescents as the future leaders and guardians of nation's development (Rao, 2001). Depression is a state of low mood and not interested in any activity that can affect a person's thoughts, feelings, behavior and physical well-being. Depression is a group of brain disorders characterized by a wide range of symptoms that are heterogenous

and reflect alterations in cognitive, psychomotor and emotional processes (Nemeroff & Vale, 2005). Depression is a group of brain disorders with varied origins, complex genetics and obscure neurobiology (Nemeroff & Vale, 2005; Malhi, Moore, & McGuffin, 2000). Various areas of the brain like the forebrain, hippocampus, amygdala, limbic system and medial prefrontal cortex appear to be implicated in depression. The two most well accepted international systems are the Diagnostic & Statistical Manual (DSM-IV) of the American Psychiatric Association and the International Classification of Disease and Related Health Problems (ICD-10) of the World Health Organization (WHO) (American Psychiatric Association, 1994; World Health Organization, 1992). Depression is mood disorders, characterized by Depressed mood most of the day, anhedonia, increase or decrease in appetite, sleep disturbances in form of increased sleepiness or insomnia, psychomotor agitation (evident by, for example, hand wringing) or slow movement, fatigue or loss of energy, not able to take decisions or diminished ability to think or concentrate, Feelings of worthlessness, hopelessness, uselessness or excessive or inappropriate guilt, associated with recurrent thoughts of death or suicide. These mood disorders include major depressive disorder (MDD); commonly called major depression or clinical depression) where a person has minimum two weeks of depressed mood or a loss of interest or pleasure in nearly all activities that person was previously enjoying; and dysthymia – which is a state of Chronically depressed mood and the symptoms of which do not meet the severity of a major depressive episode. (Kenneth ,2012).

In India, the main documented cause of anxiety among school children and adolescents are parents' high educational expectations and pressure for academic achievement (Deb, 2001). For these reasons, it is important to diagnose children who suffer from anxiety symptoms. The neuropsychiatric disorders are frequently co morbid with each other, as well as with other psychiatric disorders, mainly with major depression.

Methods

Study Design: Cross sectional study

Convenient sampling technique used with sample size of 1225 students of 11 and 12th standard of four schools of Surat during August to September 2015. Time tested and widely validated scoring systems like Beck-Depression Inventory (BDI) and Screen for Child Anxiety Related Emotional Disorders (SCARED) were used side by side, data entered in Microsoft excel 2007 and analysis was done by Epi_info version 6.04 software

Results

Table 1: Socio demographic profile of study population and the levels of Depression.

	No-Depressive symptoms (66.4%)		**Depressive symptoms present (33.6%)**				
Score	0-10 (normal)	11-16 (mild mood disturbance	17-20 (borderline depression)	21 -30 (moderate depression)	31-40 (severe depression)	> 40 (extreme depression)	P
Students	619 (50.5%)	195 (15.9%)	185 (15.1%)	196 (16.00%)	29 (2.4%)	01 (0.1%)	
1. Age in completed years							
15	109 (8.9%)	21 (1.7%)	621 (1.7%)	30 (2.4%)	6 (0.5%)	0 (0.0%)	.0001
16	371 (30.3%)	101 (8.2%)	92 (7.5%)	83 (6.8%)	14 (1.1%)	0 (0.0%)	
17	133 (10.9%)	66 (5.4%)	65 (5.3%)	76 (6.2%)	9 (0.7%)	1 (0.1%)	
18	06 (0.5%)	07 (0.6%)	07 (0.6%)	07 (0.6%)	0 (0.0%)	0 (0.0%)	
2. Gender							
Male	322 (26.3%)	82 (6.7%)	98 (8.0%)	93 (7.6%)	14 (1.1%)	0 (0.0%)	.151
Female	297 (24.2%)	113 (9.2%)	87 (7.1%)	103 (8.4%)	15 (1.2%)	1 (0.1%)	

	No-Depressive symptoms (66.4%)		Depressive symptoms present (33.6%)				
Score	0-10 (normal)	11-16 (mild mood disturbance	17-20 (borderline depression)	21 -30 (moderate depression)	31-40 (severe depression)	> 40 (extreme depression)	P
Students	619 (50.5%)	195 (15.9%)	185 (15.1%)	196 (16.00%)	29 (2.4%)	01 (0.1%)	
3. Class							
11	347 (28.3%)	109 (8.9%)	114 (9.3%)	111 (9.1%)	20 (1.6%)	0 (0.0%)	.423
12	272 (22.2%)	86 (7.0%)	71 (5.8%)	85 (6.9%)	9 (0.7%)	1 (0.1%)	
4.Medium							
Gujarati	523 (42.7%)	180 (14.7%)	178 (14.5%)	189 (15.4%)	25 (2.0%)	1 (0.1%)	.000
English	96 (7.8%)	15 (1.2%)	07 (0.6%)	07 (0.6%)	4 (0.3%)	0 (0.0%)	
5.Religion							
Hindu	553 (45.1%)	175 (14.3%)	177 (14.4%)	185 (15.1%)	29 (2.4%)	0 (0.0%)	.001
Muslim	46 (3.8%)	16 (1.3%)	05 (0.4%)	08 (0.7%)	0 (0.0%)	1 (0.1%)	
Christian	20 (1.6%)	04 (0.3%)	03 (0.2%)	03 (0.2%)	0 (0.0%)	0 (0.0%)	

Present study reported that 66.4 % students had BDI score < 17 which suggestive of no any depressive symptoms present and 33.6% had BDI score ≥17 suggestive of depressive symptoms. Also, it was found that 15.1% were mildly depressive symptoms, 16.0% were moderately depressive symptoms 2.4% were severely depressive symptoms and 0.1% extremely depressive symptoms. The age of student was independently affecting the mental health of children which was found statistically significant. In present study, we found those students age 16 year, 6.8% to 7.5% of children have BDI score of 17 - 30. Similarly, medium and religion of student were affecting the mental health of children, which was statistically significant. In case of medium and religion, Gujarati medium students, 14.5 % to 15.5% have BDI score of 17-30. However, in present study majority of participants follow Hinduism and belongs to Gujarati medium, results cannot be generalized.

Table 2: Distribution of the study population according to the place of residence and type of family with the levels of Depression.

	No-Depressive symptoms (66.4%)		Depressive symptoms present (33.6%)				
Score	0-10 (normal)	11-16 (mild mood disturbance	17-20 (borderline depression)	21 -30 (moderate depression)	31-40 (severe depression)	> 40 (extreme depression)	P
Students	619 (50.5%)	195 (15.9%)	185 (15.1%)	196 (16.00%)	29 (2.4%)	01 (0.1%)	
1.Place of residence							
Rural	52 (4.2%)	10 (0.8%)	13 (1.1%)	14 (1.1%)	1 (0.1%)	0 (0.0%)	.671
Urban	567 (46.3%)	185 (15.1%)	172 (14.0%)	182 (14.9%)	28 (2.3%)	1 (0.1%)	
2. Type of family							
1.Nuclear	299 (24.4%)	82 (6.7%)	59 (4.8%)	80 (6.5%)	16 (1.3%)	0 (0.0%)	.0001
2.Extended	48 (3.9%)	39 (3.2%)	45 (3.7%)	32 (2.6%)	1 (0.1%)	1 (0.1%)	
3.Joint	272 (22.2%)	74 (6.0%)	81 (6.6%)	84 (6.9%)	12 (1.0%)	1 (0.1%)	

Type of family was independently affecting the mental health of children which was found statistically significant. In present study, we found those students coming from joint family, 6.6% to 6.9% of children have BDI score of 17 - 30.

Mother Education was independently affecting the mental health of children which was found statistically significant. In present study, we found those mother who educated up to high school, 6.5% to 7.5% of children have BDI score of 17 - 30. Similarly, as shown in above stable education of family head also affect mental health of children which was found statistically significant. In present study, we found those fathers who educated up to high school, 6.4% of children have BDI score of 17 - 30.

Table 3: Distribution of the study population according to their parent's education and the levels of Depression.

	No-Depressive symptoms (66.4%)		Depressive symptoms present (33.6%)				
Score	0-10 (normal)	11-16 (mild mood disturbance	17-20 (borderline depression)	21 -30 (moderate depression)	31-40 (severe depression)	> 40 (extreme depression)	P
Students	619 (50.5%)	195 (15.9%)	185 (15.1%)	196 (16.00%)	29 (2.4%)	01 (0.1%)	
1.Mother education							
Illiterates	04 (0.3%)	02 (0.2%)	00 (0.0%)	05 (0.4%)	2 (0.2%)	0 (0.0%)	0.001
Primary school	17 (1.4%)	11 (0.9%)	08 (0.7%)	07 (0.6%)	1 (0.1%)	0 (0.0%)	.0001
Middle school	178 (14.5%)	28 (2.3%)	29 (2.4%)	34 (2.8%)	2 (0.2%)	0 (0.0%)	
High school	163 (13.3%)	79 (6.4%)	92 (7.5%)	80 (6.5%)	13 (1.1%)	0 (0.0%)	
Post High school diploma	19 (1.6%)	12 (1.0%)	14 (1.1%)	11 (0.9%)	2 (0.2%)	0 (0.0%)	
Graduate/post graduate	221 (18.0%)	54 (4.4%)	41 (3.3%)	56 (4.6%)	9 (0.7%)	0 (0.0%)	
Professional	17 (1.4%)	09 (0.7%)	01 (0.1%)	03 (0.2%)	0 (0.0%)	0 (0.0%)	
2. Education of family head (Father)							
Illiterates	00 (0.0%)	01 (0.1%)	00 (0.0%)	02 (0.2%)	0 (0.0%)	0 (0.0%)	.151
Primary school	06 (0.5%)	07 (0.6%)	04 (0.3%)	07 (0.6%)	3 (0.2%)	0 (0.0%)	
Middle school	67 (5.5%)	20 (1.6%)	29 (2.4%)	16 (1.3%)	4 (0.3%)	0 (0.0%)	
High school	203 (16.6%)	73 (6.0%)	79 (6.4%)	78 (6.4%)	7 (0.6%)	1 (0.1%)	
Post High school diploma	28 (2.3%)	11 (0.9%)	11 (0.9%)	16 (1.3%)	5 (0.4%)	0 (0.0%)	
Graduate/post graduate	266 (21.7%)	56 (4.6%)	55 (4.5%)	67 (5.5%)	7 (0.6%)	0 (0.0%)	
Professional	49 (4.4%)	27 (2.2%)	07 (0.6%)	10 (0.8%)	3 (0.2%)	0 (0.0%)	

The occupation of family head was independently affecting the mental health of children which was found statistically significant. In present study, we found those students whom occupation of family head up to semi professional, 4.7% to 5.9%of children have BDI score of 17 - 30. Similarly, as shown in above stable also affect mental health of children which was found statistically significant. In present study, we found those whom Socio-economic class upper middle, 6.0% to 7.1% of children have BDI score of 17 – 30.

Table 4: Distribution of the study population according to the occupation and the socioeconomic status of the family with the levels of Depression.

	No-Depressive symptoms (66.4%)		Depressive symptoms present (33.6%)				
Score	0-10 (normal)	11-16 (mild mood disturbance	17-20 (borderline depression)	21 -30 (moderate depression)	31-40 (severe depression)	> 40 (extreme depression)	P
Students	619 (50.5%)	195 (15.9%)	185 (15.1%)	196 (16.00%)	29 (2.4%)	01 (0.1%)	
1. Occupation of family head							
Unemployed	10 (0.8%)	1 (0.1%)	2 (0.2%)	2 (0.2%)	1 (0.1%)	0 (0.0%)	.0001
Unskilled	1 (0.1%)	1 (0.1%)	0 (0.0%)	1 (0.1%)	0 (0.0%)	0 (0.0%)	
Semi-skilled	27 (2.2%)	16 (1.3%)	9 (0.7%)	7 (0.7%)	1 (0.1%)	0 (0.0%)	
Skilled worker	332 (27.1%)	41 (3.3%)	58 (4.7%)	51 (4.2%)	8 (0.7%)	1 (0.1%)	
Clerical/ shop owner/ farmer	73 (6.0%)	43 (3.5%)	36 (2.9%)	35 (2.9%)	9 (0.7%)	0 (0.0%)	.0001
Semi-professional	40 (3.3%)	44 (3.6%)	58 (4.7%)	72 (5.9%)	6 (0.5%)	0 (0.0%)	
Professional	136 (11.1%)	49 (4.0%)	22 (1.8%)	28 (2.3%)	4 (0.3%)	0 (0.0%)	
2. Socio-economic classification							
1.Upper	140 (11.4%)	30 (2.4%)	19 (1.6%)	27 (2.2%)	1 (0.1%)	0 (0.0%)	.0001
2.Upper middle	343 (28.0%)	100 (8.2%)	73 (6.0%)	87 (7.1%)	18 (1.5%)	1 (0.1%)	
3.Lower middle	120 (9.8%)	36 (14.9%)	41 (3.3%)	40 (3.3%)	4 (0.3%)	0 (0.0%)	
4.Upper lower	04 (0.3%)	16 (1.3%)	39 (3.2%)	37 (3.0%)	5 (0.4%)	0 (0.0%)	
5. <5 lower	12 (1.0%)	13 (1.1%)	13 (1.1%)	05 (0.4%)	1 (0.1%)	0 (0.0%)	

Discussion

The prevalence of depressive symptomatology in the present study was found to be 33.6%. This was comparable to the other study done in India. Indian studies have shown a prevalence rate ranging from 18.4% to 79.2% (Bansal , Goyal , & Srivastava ,2009; Basker , Moses , Russell, & Russell, 2007; Daryanavard, 2011; Maharaj et al., 2008; Nair, Paul , & John ,2004). Several other studies have shown comparatively higher prevalence rates ranging from 57.7% to 67% (Nagendra, Sanjay, Gouli1, Kalappanavar1, & Vinodkumar, 2012; Asal & Abdel-Fattah, 2007). Among these studies done at diverse cultural cultural points, the data collection tools, setting of survey, age group and timing may also contribute to the wide range of prevalence rates.Some studies have observed females to be significantly more depressed than males (Eskin, Ertekin, Harlak, & Dereboy, 2008; Maharaj et al., 2008). Some study by (Joseph, 2011; Nagendra, et al., 2012) found males slightly more depressed than females. Observations in present studies revealed no significant relation between gender and prevalence of depression symptomatology, similarly studies by (Ekundayo et al., 2007; Al-Busaidi et al., 2011) have found no significant relation between gender and prevalence of depression. In the present study, the prevalence of depression with age was similar to the other studies (Ekundayo et al., 2007; Modabernia, Shodjai, Moosavi, Jahanbakhsh, & Falahi, 2007). However, one study found increased prevalence of depressive symptomatology with age. The commonest type of depression in our study was moderate type (16.00%), an observation similar to an Indian study (Joseph, 2011; Sanz Fernández, 2013). In a study by (Modabernia et al., 2007) mild variety was the commonest followed by moderate and severe

type. In study conducted by (Sanz Fernández, 2013), students in 2nd pre-university (equal to class 12 of present study) college had highest rates of depression (64.5%) followed by students in 10th class (59.8%), finding of increasing rates of depression with students scoring lesser marks was similar to that found in a study in Turkey. However, in our study, student's education level had no relation to children's depression rates. In case of medium and religion, Gujarati medium students, 32% had depressive symptomatology, 31.9% Hindu student had depressive symptomatology. However, in present study majority of participants follow Hinduism and belongs to Gujarati medium, results cannot be generalized. Studies in elementary schools in Turkey have shown that parent's educational level has an effect on their children' social and emotional characteristics. In present study, literacy up to higher school in both mother and father were associated with higher rates of depression in children. Two studies (Daryanavard, 2011) have reported association with father's education level; A study by (Nagendra et al., 2012) shown father's education level had no relation with their children's depression rates. We found those students whose occupation of family head up to semi professional, 4.7% to 5.9% of children have depressive symptoms. However, distribution of students was unequal so it cannot be generalized. However, studies by (Nagendra, et al.,2012; Daryanavard et al., 2011) shown Parent's occupation level had no effect on the prevalence of depression in children. We found that 6.0% to 7.1% of children belonging to upper middle Socio-economic class have more depressive symptoms. Similar result also found instudy in Amritsar Students from joint family system were significantly less depressed compared to students from nuclear family (Nagendra, et al., 2012). In present study students from joint family were significantly more depressive symptom. However, it differs from study done by other studies (Nagendra, et al., 2012; Kaur, Deepti & Lal, 2014).

Conclusion

Occurrence of Depression is Multifactorial. Beck Depression Inventory (BDI) score is the tool to assess Depression and suicidal tendencies in Adolescent age group. The commonest grade of Depression found is Moderate type. (BDI score 21-30). Factor like Age which suggests increasing chances of increasing age is not always true in every condition. Factors like Parent's educations, their occupations and their socioeconomic background with the place of adolescents' grown up plays a vital role in development of Depression. The most noticeable point in present study, it is noticed in adolescent with Joint Family – common family set up in India. The religion & medium of education can have impact on Occurrences of depression but it requires multicentre study & wide d fountain at to make a generalized statement.

Conflict of interest: None

Contributors: J.P & P.K conceived the idea, supervised the data collection. Jigisha will act as guarantor for the paper. J.M collected data, helped in analysis and prepared the initial draft of the paper. V.S provided support and encouragement to carry out this study. V.C helped in analysis and drafting the manuscript.

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