PREVALENCE AND ASSOCIATION OF DEPRESSION AND SUICIDAL TENDENCY AMONG ADOLESCENT STUDENTS

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Abstract
This is a cross sectional study to find the prevalence of adolescent depression, suicidal ideation and associated socio-demographic factors among adolescent students. 3141 students aged between 15 to 19 years from residential and non-residential government and private schools and colleges from Davangere participated in the study. The self administered questionnaire of Beck’s depression inventory II was used to evaluate the depression status and suicidal ideation was analyzed using item number 9 of BDI. The prevalence of depression in our study group was 57.7%. The prevalence of suicidal ideation was significantly ($P=0.000$) more among depressed (41.7%) compared to non-depressed (11.4%). Residential school students were more depressed (74.5%) than non-residential school students (52.1%, $P = 0.000$). Students from joint family were less depressed (40.1%) compared to those from nuclear family (63.3%, $P =0.000$). Moderate depression was the commonest type followed by mild, severe and extreme types. Age, sex, class, recent academic performance, mother’s education level, factors at home like quarrel, financial, alcoholism and chronic illness in parents showed significant relationship with prevalence of depression. Depressed students had problem getting along with parents, siblings, friends and teachers. Parents education level and occupation status had no association with depression rates. To conclude the prevalence of depression in adolescent students of our study group was high and suicidal ideation was significantly high among the depressed students.

Keywords: Adolescent, depression, suicide, residential school, parent’s education, joint family

1. Introduction
WHO defines adolescents as individuals aged 10-19 years. In India, they account for 20% of the population1. An estimated 20% of the world’s adolescents have a mental health or behavioral problem2. Just 50 years ago, many physicians had reservation regarding the existence of significant depressive disorders in children; primarily because they believed that children lacked the mature psychologic and cognitive structure necessary to experience these problems. However, a growing body of evidence has confirmed that children and adolescents not only experience the whole spectrum of mood disorders but also suffer from the significant morbidity and mortality associated with them. Suicide has become a growing public health concern as successive generations have shown a parallel increase of suicide and depression in the pediatric age group 1,2. Childhood depression, like the depression of adults, can encompass a spectrum of symptoms ranging from normal responses of sadness and disappointment in stressful life events to severe impairment caused by clinical depression that may or may not include evidence of mania.

Single largest contributor to the global burden of disease in the age group 15-45 years is depression3. By the year 2020, depression is projected to reach second place ranking of Disability-Adjusted Life Year (DALY) calculated for all ages and sex4. Depression is a major risk factor for committing suicide which is among the 3 leading causes of mortality in the age group of 15-35 years5. Depression in adolescents is an under recognized mental health problem because they be indecisive to disclose their feelings and seldom seek psychiatric help. One of the factors that make depression so difficult to diagnose in adolescents is the common behavior changes that are normally associated with the hormonal changes of this period. It has only been in recent years that the medical community has acknowledged childhood depression and viewed it as a condition which requires intervention. Care givers and teachers may not easily recognize the depressive symptoms. Social factors do play...
a role in the development of depression, even though there is a biological tendency. Studying the prevalence of depression in adolescents and associated socio-demographic factors will contribute in planning the preventive and control strategies. In this study we aimed to determine the prevalence of depression and its association with socio-demographic factors among schools and college students and to evaluate the prevalence of suicidal ideation among the depressed students at Davangere District, Karnataka

2. Materials and Methods:

2.1 Ethical clearance: This study was approved by the institutional ethics committee. Permission from the heads of the respective institutions was taken after explaining the purpose of the study. Participation in the study was on voluntary basis. Total confidentiality of the institution and individual was assured. This is a cross-sectional study done in Davangere district. Davangere is a tier-III city in Karnataka State, India with a population of 4,35,125. The sample size was calculated assuming a prevalence of depression to be 18.4% as reported in a previous Indian study. By simple random sampling, a total of 3141 students were included from 6 high schools, 6 pre-university colleges, 1 Industrial Training Institute (ITI) college, all of non-residential type and 2 high schools, 2 pre-university colleges of residential type, from both government and private sectors. The students with any major physical illness or diagnosed illness were excluded from the study. Students were given a brief lecture in the class room about the purpose of the study and informed consent was taken from each of them. The Beck’s Depression Inventory II (BDI) in English and local language was used to evaluate the prevalence of depression among the depressed students at Davangere District, Karnataka. The self-administered questionnaire consisted of 21 items with multiple choice answers were given to all the study subjects and scoring was done as per the recommendation. Maximum score was 63. A score of 0—16 was considered as normal, 17—20 as mild / borderline depression, 21—30 as moderate depression, 31—40 as severe depression and 41—63 as extreme depression. Suicide ideation was analyzed using the item number 9 of BDI. Statistical analysis was done using SPSS version 16 software.

3. Results:
The response rate was 99.5% with 3126 participants giving completely filled questionnaires. The prevalence of depression in this study group was 57.7%. Boys were significantly more depressed than girls. Moderate depression was the most common type, followed by mild depression, severe depression, and least common was extreme depression. There was significant association with age. Prevalence of depression increased from 15 years of age, peak at 18 years and a dip at 19 years of age. Students in 10th class and 2nd pre-university college were more depressed compared to 1st pre-university college students and it was least among job oriented ITI students. Residential school students were found to be more depressed than non-residential school students. Students from joint family were significantly less depressed compared to nuclear family. (Table II)

Suicidal ideation, as assessed by score of >0 in item number 9 of BDI was significantly more among depressed students compared to non-depressed students (Table III). Among the pre-university students (50.7%). Suicidal ideation was high among the pre-university students (50.7%). Suicidal ideation increases with the severity of depression. Among the mild depression group, the suicidal ideation was 23.1%, moderately depressed group the suicidal ideation was 40.6%, among severely depressed group, the suicidal ideation was 68.35%, and among extremely depressed group the suicidal ideation was 84.2%. Depression rates in children showed a decreasing trend with increasing mother’s education level (P = 0.00), but father’s education level (P =0.089) and occupation of both parents had no relationship. for father P =0.184, for mother P = 0.786. Depression rates were significantly more among students who had problems at home like quarrel (77.1%, P = 0.000), financial (70% , P =0.000), alcoholism (81.7% , P = 0.000), and chronic illness in parents (80.8% , P = 0.000). Depressed students had more problem in getting along with parents (78.5% , P = 0.000), siblings (81.7% , P =0.000), friends ( 79.8%, P = 0.000), and teachers (75.4%, P = 0.000).

4. Discussion:
The prevalence of depression was found to be 57.7% in our study. This was comparable to the results of the study
done by Asal AR et al in Saudi Arabia where the prevalence rate was 67.3%. Several other studies in the west have shown comparatively lower prevalence rates ranging from 9.9% to 34%. Studies in India have shown a prevalence rates ranging from 18.4% to 79.2%. Among these studies done at diverse culture points, the data collection tools, setting of survey, age group and timing may also contribute for the wide range of prevalence rates.

Many studies have observed females to be significantly more depressed than males. Observations in our studies were contrasting in males being significantly more depressed than females. A study by Joseph et al also found males slightly more depressed than females, but there was no statistical significance. Studies by Ekundayo et al and Al-Busaidi Z et al have found no significant relation between gender and prevalence of depression. Our finding of increase in prevalence of depression with age was similar to the studies by Joseph et al and Said Bodur et al. However studies in Iran by Modabber et al and Jamaica by Ekundayo et al did not find any increase in prevalence of depression with age.

The commonest type of depression in our study was moderate type (50.58%), an observation similar to an Indian study by Joseph. In a study by Modabber et al from Iran mild variety was the commonest followed by moderate and severe type. However the prevalence of severe depression (18.5%) in our study was higher compared to those studies.

In our study group, students in 2nd pre-university college had highest rates of depression (64.5%) followed by students in 10th class (59.8%). Our finding of increasing rates of depression with students scoring lesser marks was similar to that found in a study in Turkey by Said Bodur et al. Students in residential schools were significantly more depressed compared to non-residential schools. The probably due to students in residential schools may have to cope up with additional stress like living away from their family and formation of new social groups.

Students from joint family system were significantly less depressed compared to students from nuclear family. Possible explanation is that in joint family system, all the members may work cohesively to solve a problem faced by any one member of the family, thereby decreasing one’s stress.

Studies in elementary schools in Turkey have shown that parent’s educational level has an effect on their children’s social and emotional characteristics. We observed that higher literacy rate in mother was associated with lower rates of depression in children. Two studies have reported similar association with father’s education level. However in our study, father’s education level had no relation to their children’s depression rates.

Parent’s occupation level had no effect on the prevalence of depression in children, an observation similar to studies in Iran. In our study students who had problem at home like quarrel, financial, alcoholism, chronic disease in parents had significantly higher rates of depression. Similar finding were noted in other studies. Risks in the family environment may contribute to the development of depression in children. Chronic illness among parents may pose additional responsibilities and lack of emotional support in children. Depressed students had problem getting along with parents, teachers, siblings and friends. Problematic relationship may be associated with greater depression. However the question is of what comes first, the interpersonal problems or the depressive symptoms.

Prevalence of suicidal ideation among the depressed was high (41.7%). Lower rates was observed by Khalil et al in a study involving only females and using a different tool. Though we found males to be more depressed than females, depressed females had significantly more rates of suicidal ideation compared to depressed males. Students studying in 2nd pre-university college who had the highest rates of depression, also had the highest rates of suicidal ideation. As the severity of depression increased, prevalence of suicidal thoughts also increased.

A few limitations of this study were (1) BDI is a screening tool, hence further clinical assessment is needed for confirming the diagnosis of depression and deciding the management. (2) Since this is a cross-sectional study, it is difficult to establish the causal link between depression and associated factors studied. Information on academic performance was taken from students, without cross checking from school records. (4) Item number
which was used to study suicidal ideation also contributes to the overall scoring in BDI. Longitudinal studies to establish the causal link between depression and associated factors is needed. More studies involving also the age group 10—15 years, parents, teachers, rural students and more socio-demographic factors is required.

In conclusion, the study has found that the rate of depression among adolescents in a tier-III city is high. Moderate depression was the commonest type. Suicidal ideation was significantly more among the depressed female students and increased with severity of depression. The prevalence of depression was found to be more among students of male sex, residential school, nuclear family and those who had problems at home like quarrel, alcoholism, financial and chronic illness in parents. Depressed students had problem getting along with parents, siblings, teachers and friends. There was significant relationship between depression and age, class, academic performance and mother’s education level.

Parents, teachers and caregivers especially at residential schools should be educated about the symptoms of depression to aid in early recognition. Counseling and guidance services should be made available to depressed students, especially to those with suicidal ideation. The implications from this study can be made use in the planning of preventative programmes to promote mental health in adolescents.

References:
# Table 1: Demographic Characteristics of the Study Population (Total = 3126)

<table>
<thead>
<tr>
<th>Age (yr)</th>
<th>10th class</th>
<th>1st Pre-University college</th>
<th>2nd Pre-University college</th>
<th>ITI</th>
<th>Total</th>
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<tr>
<td>15</td>
<td>346</td>
<td>43</td>
<td>00</td>
<td>02</td>
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<td>25</td>
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<td>435</td>
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<tr>
<td>19</td>
<td>00</td>
<td>03</td>
<td>00</td>
<td>152</td>
<td>155</td>
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</table>

**Sex**
- Male: 505 (635, 337, 00, 02, 391)
- Female: 230 (793, 213, 49, 1285)

**Type of school**
- Residential: 319 (336, 134, 00, 789)
- Non-residential: 416 (1092, 416, 1084)

# Table 2. Prevalence of depression

<table>
<thead>
<tr>
<th>Age (yr)</th>
<th>No. of subjects</th>
<th>Non Depressed</th>
<th>Depressed</th>
<th>P value</th>
<th>Severity of Depression</th>
<th>Severities of Depression</th>
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</thead>
<tbody>
<tr>
<td>15 years</td>
<td>391</td>
<td>1843</td>
<td>207</td>
<td>0.006</td>
<td>70 17.9%</td>
<td>101 25.8% 31 7.9% 13 1.3%</td>
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<tr>
<td>16 years</td>
<td>1084</td>
<td>480</td>
<td>604</td>
<td>0.006</td>
<td>171 15.8% 323 29.8% 101 9.3% 49 8%</td>
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</tr>
<tr>
<td>17 years</td>
<td>1061</td>
<td>424</td>
<td>637</td>
<td>0.006</td>
<td>181 17.1% 303 28.6% 137 12.9% 16 1.5%</td>
<td></td>
</tr>
<tr>
<td>18 years</td>
<td>435</td>
<td>160</td>
<td>275</td>
<td>0.006</td>
<td>74 17% 138 31.7% 57 13.1% 6 1.4%</td>
<td></td>
</tr>
<tr>
<td>19 years</td>
<td>155</td>
<td>75</td>
<td>82</td>
<td>0.006</td>
<td>23 14.8% 48 31% 9 1.3% 8 1.1%</td>
<td></td>
</tr>
</tbody>
</table>

**Sex**
- Male: 1841 (750, 1091, 604, 207, 391)
- Female: 1285 (571, 714, 604, 207, 391)

**Type of school**
- Residential: 789 (201, 588, 44.4%, 74.5%)
- Non-Res: 2337 (1120, 1217, 47.9%, 55.6%)

**Class**
- 10th: 735 (300, 435, 40.8%, 59.8%)
- 1st Pre-University College: 1428 (636, 792, 44.5%, 55.5%)
- 2nd Pre-University college: 550 (195, 355, 35.5%, 64.5%)
- ITI: 413 (190, 223, 46%, 54%)

**Type of family**
- Nuclear: 2376 (872, 1504, 36.7%, 63.3%)
- Joint: 750 (449, 301, 59.9%, 40.1%)

$ Number of subjects, ** Percentage

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<table>
<thead>
<tr>
<th>Score in item 9</th>
<th>BDI score</th>
<th>TOTAL</th>
<th>P value</th>
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<tr>
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<td>Depressed</td>
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<tr>
<td></td>
<td>&lt;16</td>
<td>&gt;16</td>
<td></td>
</tr>
<tr>
<td>0 (non-ideators)</td>
<td>1170</td>
<td>1052</td>
<td>2223</td>
</tr>
<tr>
<td></td>
<td>88.6%</td>
<td>58.3%</td>
<td>71.1%</td>
</tr>
<tr>
<td>1 to 3 (ideators)</td>
<td>151</td>
<td>753</td>
<td>904</td>
</tr>
<tr>
<td></td>
<td>11.4%</td>
<td>41.7%</td>
<td>28.9%</td>
</tr>
<tr>
<td>TOTAL</td>
<td>1321</td>
<td>1805</td>
<td>3126</td>
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