



## PREVALENCE OF DEPRESSION AND FACTORS ASSOCIATED WITH DEPRESSION AMONG DEGREE COLLEGE STUDENTS OF MANDYA CITY: A CROSS-SECTIONAL STUDY

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### ABSTRACT

Depression is characterized by sadness, loss of interest, feelings of guilt, disturbed sleep or appetite, and poor concentration which is different from regular mood fluctuations. Since most of the cases go undiagnosed, depression becomes a serious problem worldwide. **Aims:** To determine the burden of depression and its associated factors among degree college students. **Methodology:** Cross-sectional study was conducted from November 2023 to October 2024 and 1750 participants were selected from colleges offering B.A., B.Com., and B.Sc. degrees in Mandya city using systematic random sampling. Data was collected using a semi-structured pretested questionnaire which includes Beck's Depression Inventory II. Information regarding various other factors was also collected. Statistical analysis: Descriptive statistics like frequency, proportion for categorical data, mean and standard deviation for continuous data were used. Inferential statistics like the chi-square test to determine the association. **Results:** The prevalence of depression in our study was found to be 29% and age showed a significant association with depression. Females showed a slightly higher prevalence (31%) compared to males (27%). Also, students not engaged in physical activity having 1.36 times higher odds of depression. The reported mean time spent on internet is 9 hours  $\pm$  48.98 minutes (7 – 11 hours). **Conclusions:** About one-third of individuals were reported having depression. The significant predictors of depression were increasing age, gender, family, socio-economic status, family history, external appearances, psychological factors, academic stresses, physical activity, interpersonal relationship and financial issues.

**KEYWORDS :** Depression, Beck's Depression Inventory II, Degree college, Students, Mental health

### INTRODUCTION

Depression is characterized by sadness, loss of interest or pleasure, feelings of guilt or low self-worth, disturbed sleep or appetite, feelings of tiredness, and poor concentration.<sup>1</sup> Depression can be long-lasting or recurrent, substantially impairing an individual's ability to function at work, school, or cope with daily life.<sup>2</sup> Depression can be classified based on its severity into mild, moderate, and severe.<sup>3</sup>

In 2021, it is estimated 3.8% of the global population suffered from depression. Also, 4.79% of those aged 20-24 suffered from depression, with the majority of them being females.<sup>1</sup> According to the National Mental Health Survey (NMHS) of India 2015-2016, the prevalence of depressive disorder in India was 2.7%, indicating that nearly 1 in 40 suffer from depression. In the age group of 18-29 years in India, the prevalence of depression was 1.61% (males- 2.37%; females - 2.97%).<sup>4</sup>

This study had included young people i.e., those between 19-24 years since they are a unique set of people going through a crucial transitional stage from childhood to adulthood. The importance of adolescent health has begun to gain increasing recognition, particularly in developing countries like India where nearly 45% of the population is under the age of 25 years.<sup>5</sup>

As a result of the rising trends of sedentary lifestyles, decreased physical activity and tremendous growth of social networking sites people are becoming more stressed out, which eventually causes depression. Other factors such as financial circumstances, family type, parental disputes, relationship issues, peer pressure, academic stress, and body image perception can also contribute to depression.<sup>6-9</sup> Also there is gender variability in the prevalence of depression, with women being twice as likely as men to experience depression.<sup>10</sup>

In India according to the NMHS 2015-2016 report, the

treatment gap for major depressive disorders was 85.2%.<sup>11</sup> Since most of the cases go undiagnosed, depression becomes a serious problem worldwide and increasing efforts should be made to uncover the hidden depression, especially among young adults, and treat them early. Therefore, this study was taken up to determine the burden of depression and its associated factors among degree college students of Mandya City.

### METHODOLOGY:

#### Study Setting:

The study was conducted in colleges offering B.A., B.Com., and B.Sc. degree courses in Mandya City. The total strength of the students studying in those colleges was 7057 (N) as per the admission records for the year 22-23.

**Study Population:** Degree college students of Mandya city

**Study Design:** Cross-sectional study

**Study Period:** 12 months

#### Inclusion Criteria:

Students studying Bachelor of Arts (BA), Bachelor of Commerce (B. Com), or Bachelor of Science (B. Sc) degrees in colleges of Mandya city and those willing to give informed consent to participate in the study.

#### Sample size:

1750. Using the formula,  $n = (Z_{\alpha})^2 pq/d^2$ , with prevalence of depression as 18%<sup>8</sup> and an relative error of 10%.

**Sampling Method:** Systematic random sampling

#### Data Collection:

A semi-structured pretested questionnaire was administered to all the participants. Beck's Depression Inventory II (BDI-II) was used for screening depression. It is a 21-item self-report instrument for measuring the severity of depression in adults

and adolescents aged 13 years. It consists of 21 items with multiple choice answers with score from 0 to 3. Maximum score was 63. A score of 0-13 was considered as normal, 14-19 as mild depression, 21-28 as moderate depression, 29-63 as severe depression.<sup>12</sup>

### Statistical Analysis:

All the collected data has been entered in a Microsoft Excel sheet and analyzed using Statistical Package for the Social Sciences Software (IBM- SPSS trial version 22). Descriptive statistics like frequency and proportion for categorical data, mean and standard deviation for continuous data were used. Inferential statistics like the chi-square test to determine the association of depression. Logistic regression analysis was applied to identify the predictors of risk factors for depression.

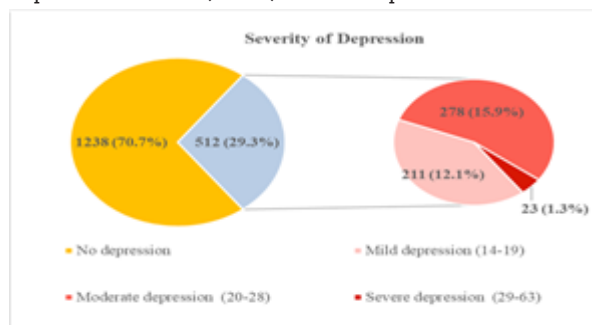
## RESULTS:

### Characteristics Of The Study Subjects

Majority of the study subjects 833 (47.6%) were in the age group of 20-21 years, followed by 797 (45.5%) in 18-19 years and 120 (6.9%) in 22 years or older. Of the study subjects 988 (56.5%) were females and 762 (43.5%) were males. Majority were pursuing commerce degree (B. Com) course 1070 (61.1%), followed by arts (B. A.) 400 (22.9%) and science (B. Sc) 280 (16.0%). Also, 1246 (71.2%) were in their final year, while 274 (15.7%) are in the 1st year, and 230 (13.1%) are in the 2nd year. Most of the study subjects 580 (33.1%) come from Class III socioeconomic status, followed by Class IV 497 (28.4%), Class II 467 (26.7%), and Class I 161 (9.2%). Least number of participants belonged to Class V 45 (2.6%) and 1576 (90.1%) had Below Poverty Line (BPL) cards, while only 174 (9.9%) had Above Poverty Line (APL) cards. Majority were from nuclear families 1179 (67.4%), followed by three generation families 266 (15.2%), broken families 188 (10.7%) and joint families 117 (6.7%).

### Prevalence Of Depression

Among the total 1750 study subjects, 512 (29.3%) were depressed and 1238 (70.7%) were not depressed.



**Figure 1:** Distribution of study subjects according to the severity of depression using Beck's Depression Inventory (BDI) II score

### Risk Factors

**Table 1:** Proportion Of Depression Among Study Subjects According To Their Sociodemographic Characteristics (n= 1750)

|             | Depression (%) | No Depression (%) | Total | p- value <sup>a</sup> |
|-------------|----------------|-------------------|-------|-----------------------|
| Age (years) |                |                   |       | <0.0001               |
| 18-19       | 212 (26.6)     | 585 (73.4)        | 797   |                       |
| 20-21       | 240 (28.8)     | 593 (71.2)        | 833   |                       |
| ≥ 22        | 60 (50.0)      | 60 (50.0)         | 120   |                       |
| Gender      |                |                   |       | 0.113                 |
| Male        | 208 (27.3)     | 554 (72.7)        | 762   |                       |
| Female      | 304 (30.8)     | 684 (69.2)        | 988   |                       |
| Religion    |                |                   |       | 0.255                 |
| Hindu       | 485 (29.3)     | 1172 (70.7)       | 1657  |                       |
| Islam       | 23 (28.8)      | 57 (71.2)         | 80    |                       |
| Christian   | 4 (30.8)       | 9 (69.2)          | 13    |                       |

|                                                 |            |             |      |       |
|-------------------------------------------------|------------|-------------|------|-------|
| Stream of degree                                |            |             |      | 0.713 |
| Commerce                                        | 306 (28.6) | 764 (71.4)  | 1070 |       |
| Arts                                            | 123 (30.8) | 277 (69.2)  | 400  |       |
| Science                                         | 83 (29.6)  | 197 (70.4)  | 280  |       |
| Year of study                                   |            |             |      | 0.393 |
| 1st year                                        | 89 (32.5)  | 185 (67.5)  | 274  |       |
| 2nd year                                        | 69 (30.0)  | 161 (70.0)  | 230  |       |
| Final year                                      | 354 (28.4) | 892 (71.6)  | 1246 |       |
| Medium of instruction                           |            |             |      | 0.300 |
| Kannada                                         | 272 (30.4) | 624 (69.6)  | 896  |       |
| English                                         | 240 (28.1) | 614 (71.9)  | 854  |       |
| Type of institution                             |            |             |      | 0.839 |
| Government                                      | 391 (29.1) | 951 (70.9)  | 1342 |       |
| Private / Aided                                 | 121 (29.7) | 287 (70.3)  | 408  |       |
| Socioeconomic Status                            |            |             |      | 0.557 |
| Class I                                         | 42 (26.1)  | 119 (73.9)  | 161  |       |
| Class II                                        | 149 (31.9) | 318 (68.1)  | 467  |       |
| Class III                                       | 168 (29.0) | 412 (71.0)  | 580  |       |
| Class IV                                        | 142 (28.6) | 355 (71.4)  | 497  |       |
| Class V                                         | 11 (24.4)  | 34 (75.6)   | 45   |       |
| Ration card                                     |            |             |      | 0.389 |
| APL                                             | 46 (26.4)  | 128 (73.6)  | 174  |       |
| BPL                                             | 466 (29.6) | 1110 (70.4) | 1576 |       |
| Type of Family                                  |            |             |      | 0.152 |
| Nuclear family                                  | 359 (30.4) | 820 (69.6)  | 1179 |       |
| Threegeneration                                 | 64 (24.1)  | 202 (75.9)  | 266  |       |
| Joint family                                    | 38 (32.5)  | 79 (67.5)   | 117  |       |
| Broken family                                   | 51 (27.1)  | 137 (72.9)  | 188  |       |
| Mother's completed number of years of schooling |            |             |      | 0.800 |
| ≤ 5 years                                       | 224 (28.6) | 523 (71.4)  | 747  |       |
| 6-10 years                                      | 250 (28.4) | 629 (71.6)  | 879  |       |
| > 10 years                                      | 38 (30.6)  | 86 (69.4)   | 124  |       |
| Father's completed number of years of schooling |            |             |      | 0.990 |
| ≤ 5 years                                       | 239 (28.3) | 583 (71.7)  | 822  |       |
| 6-10 years                                      | 216 (29.5) | 517 (70.5)  | 733  |       |
| > 10 years                                      | 57 (29.2)  | 138 (70.8)  | 195  |       |

### Physical Activity

As for physical activity, 1170 (67%) were involved in physical activity while 580 (33%) were not involved. Among those involved in physical activity, 325 (28%) had depression, while 845 (72%) did not. However, of 580 participants who were not involved in physical activity, 187 (32%) had depression, and 393 (68%) did not. This difference was not statistically significant ( $p < 0.05$ ).

### Psychological factors

Regarding family history of mental illness, among 123 participants with a positive history, 26 (21.1%) had depression. In contrast, of 1627 participants with no family history of mental illness, 486 (29.9%) had depression. Here, the difference was statistically significant ( $p < 0.05$ ).

### Sleep

The mean hours of sleep among the study subjects were found to be  $7.40 \pm 1.44$  hours. Among 1576 participants without sleep disturbances, 465 (29.5%) had depression, while 1111 (70.5%) did not. Of 174 participants who reported disturbances 47 (27.0%) had depression. This difference was also not statistically significant.

### Internet Usage

The reported mean time spent by the study subjects on internet is 9 hours  $\pm$  48.98 minutes which ranges from 7 – 11 hours. Regarding whether they neglected their studies to spend more time in internet, a large proportion of the study subjects said no 1576 (90.1%), while 174 (9.9%) reported yes, indicated neglecting their studies. This was found to be significantly associated with depression ( $p < 0.05$ ), as 72 (41.4%) of 174 those neglecting studies reporting depression compared to 440 (27.9%) of 1576 who did not.

### Substance Usage

Regarding family history of substance use, most participants 1708 (97.6%) did not have a family history of substance use, while 42 (2.4%) reported having a family history. Among those without family history, 502 (29.4%) had depression.

Majority, 1493 (85.3%) were reported that they were not using any form of substance, while a smaller proportion reported using substance 257 (14.7%). Among them using any form of substance, 66 (25.7%) had depression. The difference between these variables was not statistically significant ( $p > 0.05$ ).

### Self-harming Behaviour

Regarding self-harming behaviour, 1085 (62.0%) reported engaging in self-harming, while others 665 (38.0%) reported no such behaviour. The difference was not statistically significant ( $p > 0.05$ ).

Using multiple logistic regression analysis, the following were the significant predictors of depression: those aged  $\geq 22$  years (OR - 2.76; 95% CI - 1.87 – 4.08), those belonged to three generation family (OR - 0.72; 95% CI - 0.53– 0.98), and those neglecting studies to spend more time online (OR - 0.71; 95% CI - 0.39– 0.76).

### DISCUSSION:

#### Prevalence Of Depression

The prevalence of depression in our study among degree college students of Mandya City was found to be 29%, using BDI-II. This finding is similar to findings of earlier studies conducted among college students in South India, where prevalence ranged from 19% to 22%.<sup>6,13,14</sup> However, the prevalence was higher among studies done in rural Karnataka 46.1% and rural Odisha (43.4%).<sup>7,15</sup>

#### Sociodemographic Factors

Our study finds a statistically significant association of age with depression, where students aged  $\geq 22$  years having nearly three times higher odds of being depressed ( $\alpha\text{OR} = 2.96$ , 95% CI: 1.97–4.46) compared to those aged 18–19 years. The findings are in contrast to a cross-sectional study conducted in Bangalore among physiotherapy students where the majority who had depression were in the younger age group of 17–19 years.<sup>14</sup>

In our study we found a gender differences where females having a slightly higher prevalence of depression (31%) compared to males (27%), although this was not statistically significant. This finding is consistent with literature indicating that women are more susceptible to depression due to biological, psychological, and social factors.<sup>8,16</sup> But these findings are contrary to a study conducted in Hassan, where male medical and engineering students are more depressed (29.9%) than females (15.7%), which was statistically significant.<sup>6</sup>

#### Academic Stress And Depression

We found that 1 in 3 students find exams to be stressful and hence experiencing depression. However, majority (31.4%) of them felt their academic performance to be satisfactory. This finding was consistent with the Hassan study, where students who are unable to cope with studies (52.8%) had a significantly higher depression rate.<sup>6</sup>

#### Lifestyle And Behavioral Factors

In our study students who were not engaging themselves in physical activity, were having 1.36 times higher odds of being depressed ( $\alpha\text{OR} = 1.36$ , 95% CI: 1.01–1.84). This is similar to a study conducted among pharmacology students in Bangalore, where absence of physical activity was found to be significantly associated with depression.<sup>8</sup>

In our study, students who spent more time online, neglected their studies and had a significantly higher likelihood of depression ( $\alpha\text{OR} = 0.51$ , 95% CI: 0.32–0.82). This finding aligns with study conducted among university students in Delhi where students with internet addiction had a significantly higher proportion of depression compared to those without internet addiction (68.8% vs 45.8%, odds ratio [OR] = 2.6).<sup>9</sup>

### Family And Psychological Factors

Students from joint families exhibited higher odds of depression compared to nuclear families ( $\alpha\text{OR} = 1.11$ , 95% CI: 0.72–1.71) and those belonging to three-generation showed a significant association with depression. Conflict among parents and family history of mental illness were associated with depression, although not statistically significant.

### CONCLUSION:

- In our study, 1 in 3 students had depression.
- Among those found to be depressed less than 2 % had severe depression.
- Our study highlights that depression among college students is an important issue influenced by age, gender, family type, socio-economic status, family history of mental illness, perceived external appearances, psychological factors, perceived academic stresses, physical activity, interpersonal relationship and financial issues.

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