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Depression, suicidal ideation, and suicidal behaviors among dental students of Neo-state capital region in India

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Abstract:

BACKGROUND: The challenges of dental education place students at high risk of stress. Because dental education is a highly demanding and challenging course, placing heavy demands on the mental resources of the students, making them vulnerable to high levels of stress, this study aimed to determine the prevalence of depression, suicidal ideation, and suicidal behaviors in dental students.

MATERIALS AND METHODS: A descriptive cross-sectional study was done on a convenience sample of 388 dental students in a teaching dental institution. Data were collected using standard, prevalidated, self-administered questionnaires (Patient Health Questionnaire-9 and Suicidal Behaviours Questionnaire-Revised [SBQ-R]). Analysis was done using SPSS version 20. Descriptive statistics, Chi-square test, and logistic regression were performed.

RESULTS: At least half of the students were in major depression with different levels of severity. When students from different years were analyzed, majority from each year fell under II and III categories ($P < 0.001$). Most of the students reported that they do not have any suicidal ideation or behavior (SBQ-R). Nearly 16% of the students either presented the threat of suicidal attempt or likelihood of suicidal behavior in future. Almost 13% of the dental students thought of killing themselves in the past year for at least two times. Around 16% of them expressed to someone about their thought of committing suicide.

CONCLUSION: Even though depression and suicidal tendencies were not prominent in dental students, there is a need to shed light on those who responded positively and take necessary reforms to relieve academic stress.

Keywords:

Postgraduates, stress, suicidal tendency, undergraduates

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Introduction

Suicide is the act of killing yourself, most often as a result of depression or other mental illness.[1] Depression is a key risk factor for suicide; others include psychiatric disorders, substances used, chronic pain, a family history of suicide, and a prior suicidal attempt. Impulsiveness often plays a key role among adolescents who take their life.[2] The prevalence of suicide is often underestimated due to cultural, political, and economic circumstances. Recent reports inform that around a million people die by suicide annually, representing an annual global age-standardized suicide rate of 11.4/100,000 populations (15.0 for males and 8.0 for females),[3] which is one person every 40 s and many more may attempt suicide. Suicide occurs throughout the lifespan and is the second leading cause of

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death among 15–29 year olds globally.[2] According to the data by the accidental deaths and rate of suicides in India for the year 2019, the percentage distribution of suicide victims by the students was 10.4%, whereas that of for the year 2019 was 7.4%.[4]

While the link between suicide and mental disorders in particularly, depression, and alcohol use disorders is well established in high-income countries, many suicides happen impulsively in moments of crisis with a breakdown in the ability to deal with life stresses.[5] Nowadays humans are exposed to more stress than ever due to increasing competition and various environmental factors. The challenges of dental education place students at high risk of stress.[6,7] Dental education is a highly demanding and challenging course, placing heavy demands on the mental resources of the students, making them vulnerable to high levels of stress.[8] Suicidal ideation aids the thoughts of harming or killing oneself as it is a nonfatal, self-inflicted destructive act with explicit or inferred intent to die. Suicidality refers to all suicidal-related behaviors and thoughts including completing or attempting suicide, suicidal ideation, or communication.[9]

Depression refers that common mental disorder, characterized by persistent sadness and a loss of interest in activities that you normally enjoy, accompanied by an inability to carry out daily activities, for at least 2 weeks.[10] Hence, recognizing depression levels in vulnerable dental students plays a crucial role in making changes in the present dental curriculum. The aim of the study is to determine the prevalence of depression, suicidal ideation, and suicidal behaviors in dental students; to assess whether there is any association between depression and suicidal ideation; and to evaluate whether gender is a predictor of prevalence of these conditions.

Materials and Methods

Study design and setting

A descriptive cross-sectional study was done among dental students from a teaching dental institution of southern India in the month of February 2020.

Study participants and sampling

A total of 388 dental students were included in the study using convenience sampling method. Students from the clinical years (third and final years of undergraduation and postgraduation) were only included because they are the students who deal with the patients and are under high stress levels compared to the students from nonclinical years, and the study was not conducted during university exams to avoid exaggerated reporting.

Ethical considerations

Prior to the study, study details were explained and ethical clearance was obtained from the institutional ethical committee (239/IRB/SIBAR/2019).

Inclusion and exclusion criteria

students who were willing to participate and present on the day of data collection were included in the study, whereas students who were absent on the day and not willing to participate were excluded from the study.

Data collection tool and technique

The study pro forma has two part: the first part consisted of information regarding age, gender, and year of the study and the second part consisted of standard, self-administered, structured questionnaires (Patient Health Questionnaire[11] and Suicidal Behaviours Questionnaire–Revised[12]) to collect data regarding depression, suicidal ideation, and suicidal behavior [Annexure 1]. Patient Health Questionnaire (PHQ-9) is a self-reported depression assessment specifically developed for use in primary care. The questionnaire was taken from a previous study[11] which was pretested and validated in 233 adolescent Indian students aged 14–18 years. It has good diagnostic accuracy with a sensitivity of 87.1%, a specificity of 79.7%, good content validity, good 1-month test–retest reliability (r = 0.875), high internal consistency (Cronbach's α = 0.835), and high convergent validity with the Beck Depression Inventory (r = 0.76; P = 0.001).[11] This depression questionnaire consists of 9 items to assess the level of depression and a 10th functional health assessment item to know the perceived difficulty of the problems faced by the individuals. Each of the 9 items was scored on a 4-point Likert scale ranging from score 0 (not at all) to 3 (nearly every day). After obtaining the total score by adding the scores of the individual 9 items, the severity of depression was graded as follows: 0–4 (minimal), 5–9 (mild), 10–14 (moderate), 15–19 (moderately severe), and ≥20 (severe).[11]. Suicidal Behaviours Questionnaire (SBQ) consists of 4 items, of which responses of item number 2 and 4 were measured on 5-point and 6-point Likert scales, respectively. For item no. 2, the responses ranged from "never" to "very often." For item no. 4, the responses ranged from "never" to "very likely." Item no. 1 and 3 had 6 and 5 responses, respectively. It was validated in psychiatric inpatient adolescents, high school students, psychiatric inpatient adults, and undergraduate students. SBQ has good diagnostic accuracy with 93% sensitivity and 95% specificity.

Statistical analysis

Data analysis was done using IBM Corp. Released 2017. IBM SPSS Statistics for Windows, Version 25.0 Armonk, NY: IBM Corp. Descriptive statistics, Chi-square test, and logistic regression tests were performed.

Results

Most of the study participants were female (74.7%) and are undergraduate (76%), while majority of them belonged to internship (28.6%).

Table 1 shows that 58.3% of the participants had minimal to mild depressive symptoms, while most of the students felt that any of their depressive symptoms made it "not difficult at all" (33%) or "somewhat difficult" (56.2%) to do their work, take care of things at home, or get along with other people.

Table 2 shows that 35.8% (n = 139) of students reported that they had a thought of killing themselves; of those, 12.6% of the individuals had a suicidal plan at least once, while 3.4% have tried to attempt, whereas 32.9% of the students have the thought of attempting suicide at least once in the past year. Out of the 139 participants with the suicidal intention, 63 members have discussed about their suicidal ideation at least once with someone. Nearly 7.5% (n = 29) of the students reported that they are likely to have future thoughts of attempting suicide.

Table 3 shows that the association between year of the study and PHQ scores was highly significant ($P < 0.001$). Most of the 3rd-year BDS and 1st-year MDS students (33.3% and 54.2%, respectively) were having minimal depressive symptoms. The number of 4th-year BDS students with both minimal and moderate depression with mild severity was equal. Interns and 2nd-year postgraduates were within normal range or full remission. Third-year postgraduates were having major depression with mild severity. The association of PHQ-9 scores and gender shows that 15.2% of the female participants were with moderate and severe major depressive symptoms that warrant treatment. Nearly 22.4% of the male participants were with moderate and severe major depressive symptoms that warrant treatment and this association showed statistical significance ($P < 0.001$).

Table 4 shows the relation between PHQ and SBQ where with one unit increase in PHQ score, there were 1.283 units of increase in SBQ score. 19% of the variance in SBQ was explained by PHQ alone.

Discussion

The present study reports that majority of the study participants were perceiving depression of various levels while most of the participants were with low to high level of suicidality, which was higher in a study done by Deeb *et al*.[6] In the present study, the participants perceived higher PHQ-9 scores when compared to that of the study done by Deeb *et al*.[6] and less when compared to that of the study conducted by Galan *et al*.[13]

PHQ instrument also includes a functional health assessment. This extracts the information regarding emotional difficulties or problems that impact work, things at home, or relationships with other people. Patient responses can be one of the following four: not difficult at all, somewhat difficult, very difficult, and extremely difficult. The last two responses suggest impaired functionality. Whereas in the present study, certain percentage of the students were with impaired functionality and needed compulsory treatment.[11]

The participants had a plan of killing themselves at least once and even had attempted to kill themselves. This gives an alarming sign that reflects their failure to manage stress. While the study participants had the thought of attempting suicide in the past year at least once, similar results were observed in a survey done by Galan *et al*.[13]

Table 1: Distribution of study participants according to their level of depression severity (Patient Health Questionnaire-9 scores) and perceived difficulty of the problems faced by the participants (functional health assessment)

	Frequency (%)
Level of depression severity (PHQ-9 scores)	
0-4 (minimal)	98 (25.3)
5-9 (mild)	129 (33.0)
10-14 (moderate)	96 (24.7)
15-19 (moderately severe)	43 (11.1)
≥20 (severe)	22 (5.9)
Total	388 (100)
	Frequency (%)
Perceived difficulty of the problems faced by the participants (functional health assessment)	
No difficult at all	128 (33.0)
Somewhat difficult	218 (56.2)
Very difficult	34 (8.8)
Extremely difficult	8 (2.1)
Total	388 (100)

PHQ=Patient Health Questionnaire

Table 2: Frequency distribution for various questions in the Suicidal Behaviours Questionnaire

Questions	*n* (%)
SBQ-1. Have you ever thought or attempted to kill yourself?	
Never	249 (64.2)
It was just a brief passing thought	77 (19.8)
I have had a plan at least once to kill myself but did not try to do it	37 (9.5)
I have had a plan at least once to kill myself and really wanted to do it	12 (3.1)
I have attempted to kill myself, but did not want to die	3 (0.8)
I have attempted to kill myself, and really hoped to die	10 (2.6)
Total	388 (100)
SBQ-2. How often have you thought about killing yourself in the past year?	
Never	268 (69.1)
Rarely (1 time)	70 (18.0)
Sometimes (2 times)	26 (6.7)
Often (3-4 times)	13 (3.4)
Very often (5 or more times)	11 (2.8)
Total	388 (100)
SBQ-3. Have you ever told someone that you were going to commit suicide, or that you might do it?	
Never	76 (54.6)
Yes, at one time, but did not really wanted to die	29 (20.8)
Yes, at one time and really wanted to die	18 (12.9)
Yes, more than once, but did not want to do it	7 (5.03)
Yes, more than once, and really wanted to do it	9 (6.4)
Total (students at least with the thought of suicide)	139 (100)
SBQ-4. How likely is it that you will attempt suicide someday?	
Never	306 (78.9)
Unlikely	53 (13.7)
Likely	19 (4.9)
Very likely	10 (2.6)
Total	388 (100)

SBQ=Suicidal Behaviours Questionnaire

Table 3: The Patient Health Questionnaire-score and gender, year of the study

Variables	PHQ-score					*P*
	0-4 (minimal)	5-9 (mild)	10-14 (moderate)	15-20 (moderately severe)	≥20 (severe)	
Gender (%)						
Female	24.5	36.2	24.1	11.4	3.8	0.001*
Male	27.6	23.5	26.5	10.2	12.2	
Year of study, *n* (%)						
III BDS	18 (20.0)	30 (33.3)	21 (23.3)	15 (16.7)	6 (6.7)	0.001*
IV BDS	13 (13.8)	28 (29.8)	28 (29.8)	15 (16.0)	10 (10.6)	
Interns	43 (38.7)	37 (33.3)	19 (17.1)	10 (9.0)	2 (1.8)	
I MDS	4 (16.7)	13 (54.2)	6 (25.0)	1 (4.2)	0	
II MDS	14 (40.0)	11 (31.4)	8 (22.9)	1 (2.9)	1 (2.9)	
III MDS	6 (17.6)	9 (26.5)	14 (41.2)	1 (2.9)	4 (11.8)	

*Statistically significant; Chi-square test. PHQ=Patient Health Questionnaire

Table 4: Association between scores of Patient Health Questionnaire and Suicidal Behaviours Questionnaire

Independent variable	OR	*P*	R^2
PHQ	1.283	<0.001**	0.190

**Highly statistically significant, logistic regression test. PHQ=Patient Health Questionnaire, OR=Odds ratio

With suicidal thoughts, the participants had discussed about their suicidal ideation with others at least once, whereas half of them were not sharing with anyone, which is not a good indicator for prevention. For a segment of the participants, it was likely to get a thought of suicide in future, which is an alarming sign. Final-year postgraduate students were having major depression with mild severity. The reason could be academic pressure as they have to clear university examinations. All these findings indicate failure of students in managing stress.

The link between suicide and depression is well established in high-income countries; many suicides

happen impulsively in moments of crisis with a breakdown in the ability to deal with life stresses. Stress describes external demands (physical and mental) on an individual's physical and psychological well-being. Although it has been hypothesized that some stress may actually be beneficial as a stimulus for learning, the negative consequences of stress are significant which progress sometimes to depression and tend to initiate suicidal ideation. Although various situations tend to elicit different patterns of stress responses, there are also individual differences in stress responses to the same situation. This tendency to exhibit a particular pattern of stress responses across a variety of stressors is referred to "response stereotypy."[14] A study was done by Schmitter *et al.* to compare chronic stress between medical and dental students which concluded that chronic stress was more pronounced among dental students.[15]

In this study, the PHQ scores were directly related to the SBQ scores, which suggests that students with depression were having high suicidal behavior. There was a statistically significant association between depression and suicidal behavior, which was similar to a study done by Galan *et al*.[13] There was a statistically significant difference in PHQ scores between males and females, with females perceiving higher depression compared to males, which was in accordance with the study by Shetty *et al*.[8] and in contrast to a study done by Galan *et al*.[14] and Deep *et al*.[6]

Case control studies can be done exploring the factors associated with suicidal behavior. Early identification; treatment; and care of people with mental disorders, substance use disorders, chronic pain and acute emotional distress can prevent suicides. While training of non specialized health workers in the assessment and management of suicidal behavior; follow up care for people who attempted suicide; and provision of community support are needed.

Limitation and recommendation

Limitations

Because it is a cross-sectional self-reported survey, no causal relationship can be determined and as the study was done in one institution, the results cannot be generalized. The cross-sectional nature of the study, the possibility of retrospective bias especially in the aftermath of the suicidal attempt, and lack of scales for assessing psychiatric morbidity (especially depression and stressors) are limiting our results.

Recommendation

Suicides are preventable, and there are a number of measures that can be taken at population, sub-population, and individual degrees to save an individual from committing suicide. Preventable measures such as by reducing ingress to the means of suicide (e.g., pesticides, firearms, and certain medications); by reporting through media in a legitimate responsible way; and by introducing alcohol notions to reduce the harmful intake of alcohol are also important.

Suicide is a complex issue, and therefore suicidal prevention efforts require coordination and collaboration among multiple sectors of the society. Suicides come into limelight only when people with celebrity status commits it, therefore governmental efforts must be comprehensive and integrated as no single approach alone can make an impact on an issue as complex as suicide.

Many nongovernmental organizations are providing toll free numbers, hence it is essential for all of us as a society to frame a safe network for people going through arduous times and be prepared to listen and remind them of their ingenuity while it is high time that the government should concentrate on mental health issues and provide the toll free number that might help individuals with suicidal thoughts and at the same time bring a policy that every educational institution should have a team to monitor such acts.

Conclusion

As depression and suicidal tendencies are very prominent in students nowadays especially dental students, there is a need to shed light on these and take necessary reforms to relieve academic stress. The current investigation uncovered a wide scope of causative variables of self-destruction among dental understudies which is because of a progression of academicals pressures, future settlement, and finance.

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Conflicts of interest

There are no conflicts of interest.

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Annexure

Annexure 1

QUESTIONNAIRE:

Age: Gender: M/F Year of the study:

PHQ-9 QUESTIONNARIE

Over the last 2 weeks, how often have you been bothered by any of the following problems? *(Use "✔" to indicate your answer)*	Not at all	Several days	More than half the days	Nearly every day
1. Little interest or pleasure in doing things	0	1	2	3
2. Feeling down, depressed, or hopeless	0	1	2	3
3. Trouble falling or staying asleep, or sleeping too much	0	1	2	3
4. Feeling tired or having little energy	0	1	2	3
5. Poor appetite or overeating	0	1	2	3
6. Feeling bad about yourself — or that you are a failure or have let yourself or your family down	0	1	2	3
7. Trouble concentrating on things, such as reading the newspaper or watching television	0	1	2	3
8. Moving or speaking so slowly that other people could have noticed? Or the opposite — being so fidgety or restless that you have been moving around a lot more than usual	0	1	2	3
9. Thoughts that you would be better off dead or of hurting yourself in some way	0	1	2	3

SBQ-REVISED QUESTIONNARIE

Instructions: Please check the number (only one) beside the statement or phrase the best applies to you.

•Have you ever thought about or attempted to kill yourself?

1.Never
2.It was just a brief passing thought.
3.a. I have had a plan atleast once to kill myself but did not try to do it.
3.b. I have had a plan atleast once to kill myself and really wanted to die.
4.a. I have attempted to kill myself, but did not wanted to die.
4b. I have attempted to kill myself and really hoped to die.

•How often have you thought about killing yourself in the past year?

1. Never
2. Rarely (1 time)
3. Sometimes (2 times)
4. Often (3-4 times)
5. Very often (5 or more times)

•Have you ever told someone that you were going to commit suicide, or that you might do it?

1.Never
2a.Yes,at one time but did not really want to die
2b.Yes,at one time, and really want to die
3a. Yes, more than once but did not want to do it
3b. Yes, more than once, and really wanted to do it

•How likely is it that you will attempt suicide someday?

•Never
•Unlikely
•Likely
•Very likely