

# Prevalence of Psychiatric Morbidity Among Undergraduate Students of a Dental College in West Bengal

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## ABSTRACT

**Background:** Stresses of medical course affects the academic performance as well as physical and psychological health of the students negatively. In the present day scenario every one of us has vulnerability to have psychiatric morbidity. Like other young adults, undergraduate dental students are similarly vulnerable to turmoil due to academic and social stresses, which often hamper the educational achievement. Early detection and treatment of psychological morbidities shorten the suffering leading to less social impairment in long term.

**Aim:** The aim of this study was to assess the psychiatric morbidity of dental students and the factors affecting their mental health.

**Settings and Design:** This cross sectional, descriptive and correlation study was conducted in North Bengal Dental College, a rural dental college of West Bengal, India.

**Materials and Methods:** The study sample consisted of a total of 89 dental students. The student enrollment was done

by “simple random sampling method”. The semi-structured proforma and the General Health Questionnaire (GHQ)-28 were used to collect data and to assess the psychiatric morbidity.

**Statistical Analysis:** Pearson’s correlation followed by multivariate linear regression analysis was done to assess the effect of academic achievement, positive and negative event on the GHQ total score.

**Results:** The overall mean GHQ total score in the study population was 5.33, with a SD of 4.85 which was above the cutoff (>4) score. Karl Pearson correlation co-efficient r-values for GHQ total score with ‘academic achievement’ and ‘negative events’ score were 0.718 and 0.628 respectively and p-values were 0.001 and 0.001.

**Conclusion:** The poor academic performance and negative events had strong impact on psychological morbidity of dental students. The findings of our study can’t be generalized for all undergraduate dental student due to small sample size and non inclusion of many other variables.

**Keywords:** Academic achievement, GHQ-28, Mental health

## INTRODUCTION

A stress of medical course itself is a burden which affects academic performance as well as physical and psychological health negatively [1]. Medical course is inherently stressful worldwide [2]. High level of different kinds of psychological distress has been noticed among students during medical training and much published data confirms the view that students are excessively prone to mental health problems [3-5]. The adverse effect of psychological distress among students reduces their self-esteem that leads to a cascade of consequences at both personal and professional levels which include college dropout, impaired ability to work effectively, poor academic achievement, disturbed relationship and suicide [6]. They may engage in potentially harmful methods of coping with stress by taking tobacco, alcohol and other substance.

In the present day scenario every one of us has the vulnerability to have at least one incidence of psychiatric ailment in our life time [7]. As other young adults, undergraduate dental students are similarly vulnerable to turmoil due to academic and social stresses. The undergraduate dental students like other professionals faces stress from various aspect of life including academics, personal and family related events, emotional trauma, work related stresses, time management and economic scarcity [8,9].

In the United States, 37% of young adults comprising mostly college student in the age group 15 to 24 years have at least one diagnosable psychiatric morbidity [9]. Similar facts were evident among British university students [9]. Phippen’s found in his study 64% of the 152 students attending counseling services had serious psychiatric morbidities [9,10].

According to the WHO report on mental and neurological disorders at least one mental or behavioural disorder at some stage in life may

be found among 25% of general population in developed as well as developing countries. The report showed that depression was the major mental disorder where 5.8% of men and 9.5% of women had a depressive episode in any given year [11]. One Indian study showed that the overall prevalence of depression among medical students was 71.25% [12]. Studies on psychological problems among medical students found that these disorders are under-diagnosed and under-treated. Although some stress is expected in college and it can be a motivation to study and learn, too much stress can deter learning [13]. It has been found in relation to general population, dental students develop much more stress and anxiety related symptoms and symptoms of depression and obsessive-compulsive disorders during their training [8]. Studies among dental students showed that dental education as well as practice had stress provoking elements that affect the student negatively on their emotional well-being [14].

Stress and academic performance of dental students are negatively related. As perception of stress varies according to socio-cultural factors, the results of studies in one region cannot be generalized to other region. Early detection and treatment of psychological morbidities shorten the suffering leading to less social impairment in long term [15].

Till now there are very few studies on psychiatric morbidity and related affairs among dental students in India [8,12,13]. Therefore, it is very important to assess the psychological status as well as to treat psychiatric morbidity for prevention of its ill effects on dental students. In this background the present study was undertaken to assess the psychiatric morbidity among dental students and to find out the association between psychiatric morbidities and academic achievement among dental students in North Bengal Dental College, one of the rural dental college in West Bengal, India.

## MATERIALS AND METHODS

### Participants

The present study was conducted in a rural dental college of West Bengal on students who were studying in different academic years of undergraduate course. Total students of the college in all academic years were 200. Ethical approval was obtained from the institutional ethical committee for this study. Objective of the study was explained and written consent was obtained from all the participants and they were assured that their personal information will be kept confidential. The data were collected by using a self-administered, standardized, semi-structured proforma. The information was collected on the students' socio-demographic characteristics, academic achievement, positive and negative event in recent past and General Health Questionnaire (GHQ-28) scores.

### Sample size

Total 89 students were taken of whom 22, 22, 23, and 22 students respectively from 1<sup>st</sup> year, 2<sup>nd</sup> year, 3<sup>rd</sup> year and from 4<sup>th</sup> year. The dental college has total 200 students with new admissions of 50 students yearly. We took the students from each academic year to increase the sample size to avoid the "sampling error". The students were enrolled into the study by "simple random sampling method" as study population is small, homogeneous and readily available. The randomization is done by assigning a number to each student of every academic years followed by selection of the student by the help of a 'table of random numbers'.

### Instruments

GHQ-28 [16]: It is a self-administered screening tool that detects common non-psychotic psychiatric morbidity in the community, including anxiety and depression. The questionnaire refers to symptoms experienced in the last few weeks, and is therefore an indication of *state* rather than *trait* characteristics at a point in time. The GHQ can not be used to diagnose specific psychiatric disorders, but identifies potential psychiatric morbidity. We used the 28-item version of the GHQ to screen for symptoms of psychological stress. GHQ-28 had four sub scales for the assessment of somatic symptoms, anxiety and insomnia, social dysfunction and depression respectively. The cut off score designated for the 28-item version of GHQ is a score higher than 4, which is highly sensitive for the person to have potential psychiatric morbidity. Binary scoring (e.g. felt constantly under strain were scored as '0' = 'No more than usual', '0' = 'Not at all', '1' = 'Rather more than usual', '1' = 'Much more than usual') of the GHQ was used for case identification and for determining the total mean GHQ score.

## STATISTICAL ANALYSIS

Descriptive analysis was computed in terms of mean and standard deviation for continuous variables and frequency with percentage for ordinal and nominal variables. Correlation analysis among the GHQ total score with various independent variables was done using Pearson's product moment correlation.  $p < 0.05$  (2-tailed) was taken to be statistically significant for all statistical methods applied. Correlation analysis followed by multivariate linear regression analysis with "enter" method was applied to study the effect of various independent variables like academic achievement, positive and negative event on the GHQ total score. The statistical package for social sciences (SPSS), version 16.0 was used for the analysis of the data of this study.

## RESULTS

Eighty nine students of different academic years voluntarily completed the study instruments. The mean age of the study participants was  $22.53 \pm 1.7$ (SD) years, with a range of 18-26 years. The majority of the students were single (98.9%) and were members of nuclear families. The summary of the socio-demographic characteristics

including academic performance as well as positive and negative life events of the sample are shown in [Table/Fig-1].

The overall mean GHQ-28 total score in the study population was 5.33, with a SD of 4.85 which was above the cutoff ( $>4$ ) score. The mean score was highest in the subscale of "severe depression ( $1.82 \pm 2.13$  SD)" followed by "social dysfunction ( $1.52 \pm 1.34$  SD)". The lowest mean GHQ score of  $0.82 \pm 1.20$  was found in the "somatic symptoms" [Table/Fig-2]. The higher score among the dental students indicated that the non-psychotic psychiatric morbidity was high among them. More than half (52.8%) of the participant student had psychiatric morbidity (GHQ-28 total score  $>4$ ). Almost same percentage (10% to 11%) of student in each academic year had psychiatric morbidity (GHQ  $>4$ ) [Table/Fig-3] except 3<sup>rd</sup> year (15%) students. Very strong associations [Table/Fig-4] and statistically significant correlations were found among the GHQ total score and independent variables viz. academic achievement, presence of experiences that had influenced psychosocial well-being in the last year [Table/Fig-3]. Karl Pearson positive correlation coefficient *r-values* for GHQ total score with academic achievement and negative events score were 0.718 and 0.628 respectively

Variables; n = 89		No. (%)
Gender	Male	53 (59.6)
	Female	36 (40.4)
Age	18-20	06 (6.7)
	21-24	70 (78.7)
	25-29	13 (14.6)
Habitat (permanent)	urban	24 (27.0)
	Rural	65 (70.0)
Monthly family income (Rs.)	< 20000	35 (39.3)
	20000-30000	14 (15.7)
	>30000	40 (44.9)
Academic achievement as per students' opinion	Good	37 (41.6)
	Medium	25 (28.1)
	Poor	27 (30.3)
Positive event in recent past	Absent	53 (59.6)
	Present	36 (40.4)
Negative event in recent past	Absent	46 (51.7)
	Present	43 (48.3)

[Table/Fig-1]: Socio-demographic characteristics of participant dental student

		Mean	Std. Deviation
GHQ- 28 subscale	Somatic Symptoms	0.82	1.202
	Anxiety and Insomnia	1.33	1.475
	Social Dysfunction	1.52	1.349
	Severe Depression	1.82	2.135
GHQ -28 Total	Total Score	5.33	4.859

[Table/Fig-2]: GHQ-28 Scores of participant dental student

Variables		Academic achievement*	Positive event <sup>†</sup>	Negative event <sup>‡</sup>	GHQ total scores
Academic achievement <sup>†</sup>	Pearson's Correlation Coefficient (r)	1	-.571	.718	.737
	p-value		.000	.000	.000 <sup>§</sup>
Positive event <sup>†</sup>	Pearson's Correlation Coefficient (r)		1	-.385	-.439
	p-value			.000	.000 <sup>§</sup>
Negative event <sup>‡</sup>	Pearson's Correlation Coefficient (r)			1	.628
	p-value				.000 <sup>§</sup>

[Table/Fig-3]: Correlation matrix between different main independent variables with GHQ total scores

\* Student's academic achievement

<sup>†</sup> Presence of experiences that had positive effect on psychosocial well-being

<sup>‡</sup> Presence of experiences that had negative effect on psychosocial well-being

<sup>§</sup> Correlation is significant at the 0.01 level (2-tailed)

and *p-values* were 0.000 in both spheres which were statistically significant. The negative correlation coefficient *r-value* for GHQ total score with positive events was found to be -0.439 and *p-value* was 0.000 which is also statistically significant [Table/Fig-3].

To study the effect of various independent variables on GHQ total score, multivariate linear regression with “enter” method was performed. For this, all the variables (viz. academic achievement, positive and negative events) that had shown significant correlation with the GHQ total score were considered as independent variables. The total scores on GHQ-28 were considered as dependent variables. Interpretation of result appeared as the percentage variance for the dependent variable by the independent variables separately and in combination as well as by examination of the partial correlations of the residuals independent variables those having significant predictive power (e.g. significance level < 0.05) with the dependent variable.

The student’s academic achievement and presence of experiences that had influenced their psychosocial well-being in the last year emerged as the sole significant predictors of psychiatric morbidity [Table/Fig-5].

## DISCUSSION

The young professional students always face stresses during their training due to lack of experience and rigorous training schedule. Medical training is known to be highly demanding, challenging and stressful. Modern dental curricula require the students to have to developed proficiencies in various domains which include acquisition of theoretical knowledge as well as clinical and interpersonal skills [8].

Independent variable		Dependent variable: GHQ Total score (categorical); N (%)	
		>4	4 and <4
Gender	Male	24 (51.1)	29 (69.0)
	Female	23 (48.9)	13 (31.1)
Academic year	1 <sup>st</sup> year	11 (23.4)	11 (26.2)
	2 <sup>nd</sup> year	10 (21.3)	12 (28.6)
	3 <sup>rd</sup> year	15 (31.9)	08 (19.0)
	4 <sup>th</sup> year	11 (23.4)	11 (26.2)
Academic achievement*	Good	00 (00)	37 (88.1)
	Medium	20 (42.6)	05 (11.9)
	Poor	27 (57.4)	00 (00)
Positive event <sup>†</sup>	Absent	40 (85.1)	13 (31.0)
	Present	07 (14.9)	29 (69.0)
Negative event <sup>‡</sup>	Absent	08 (17.0)	38 (90.5)
	Present	39 (83.0)	04 (9.5)
GHQ total score - categorical		47 (52.8)	42 (47.2)

**[Table/Fig-4]:** Association among main independent variables and GHQ-28 total scores

\* Student’s opinion of his/her academic achievement  
<sup>†</sup> Presence of experiences that had positive effect on psychosocial well-being.  
<sup>‡</sup> Presence of experiences that had negative effect on psychosocial well-being

Predictors	B-value	Std. Error	t-value	Adjusted R <sup>2</sup> value	Mean Square	f-value	p-value
				.549	390.55	36.64	0.0001 <sup>§</sup>
Academic achievement*	3.26	.665	4.90				0.0001 <sup>§</sup>
Negative event <sup>‡</sup>	2.001	.995	2.01				0.048 <sup>§</sup>
Positive event <sup>†</sup>	-.352	.860	-.410				0.683

**[Table/Fig-5]:** Predictor of psychiatric morbidity (GHQ scores) - Regression analysis by enters method

\* Student’s academic achievement  
<sup>†</sup> Presence of experiences that had positive effect on psychosocial well-being  
<sup>‡</sup> Presence of experiences that had negative effect on psychosocial well-being  
<sup>§</sup>Correlation is significant at the 0.05 level (2-tailed)

This study examined the relationship between psychiatric morbidity as measured by the GHQ-28 with some socio-demographic characteristics, academic achievement, positive and negative events in recent past of dental students. GHQ-28, which was used to assess the mental health status of the students, was found to be both valid and reliable for use in adults in many different countries and is a screening test used by the World Health Organization (WHO) in one of its multicentre studies [17].

Many epidemiological studies conducted in India on mental and behavioural disorders report varying prevalence rates, ranging from 9.5 [18] to 370 per 1000 population [19]. In our study, the prevalence of psychiatric manifestations among dental student was 52.8%. A recent nationwide study in Turkey on the burden of diseases also found GHQ-12 scores above the cut-off (≥4) point among 56.8% university students [19]. Study carried out by Kessler et al., [20] Phippen et al., [10], Ganes et al., [12] have documented nearly similar prevalence among medical student. A study conducted in UK indicated that approximately half of the surveyed students described a major stressful situations related to medical training [21]. In a previous study conducted to assess the psychological health of undergraduates during their initial entry to the university using the GHQ, 57% of the medical students and 47.3% of the law students were found to have scores above the traditional cut-off points [22].

The number of studies among dental students at the national level is inadequate. Prevalence rates of psychiatric disorders vary across the populations as well as in the same population from time to time. In addition, prevalence can also vary according to diagnostic tool used and variation can occur due to inter rater variability [23].

In our study when students were asked about the events in the last year that had influenced their psychological wellbeing, 69.7% of them reported problems in academic achievement (Pearson’s Correlation Coefficient (*r*) = 0.737; *p-value* = .000) such as failing the class or poor performance (30.3%), negative event (48.3%) (Pearson’s Correlation Coefficient (*r*) = 0.628; *p-value* = .000) such as death of a close relative and loss of relation. Similarly, most of the students reported educational achievements (41.6%) such as passing the class or success in the university entrance exams, a positive event (40.4%) in the family such as birth or marriage, or positive progress in their intimate relationship as the happiest event in the last year that had promoted their psychosocial well-being [Table/Fig-1,3]. According to Lo [24] and Uner et al., [9] the GHQ measures two types of stress - chronic and transient. Presence of the “negative event” variable in all models of cut-off points might suggest that events that result in emotional trauma have long-term effects on the mental health of students. On the other hand, experience of a positive event has a favourable effect on mental health.

In our study, dental students with a medium (42.6%) and poor (57.4%) academic achievement were found to be at higher risk versus those with a high level of achievement [Table/Fig-4]. Presence of academic achievement in all models of cut-off points might suggest that high academic achievement has a positive effect on the mental health of students, as measured by GHQ-28 [Table/Fig-1,3]. The results of our study is in accordance with similar previous studies [9,25] in the literature.

Socio-demographic factors are among the strong predictors of depression and anxiety [26].

No difference was found in our study in GHQ case status between male and female students. Our finding is in accordance with the results of some previously published study on gender and psychiatric morbidity [27].

Our study did not find any significant difference in GHQ-28 scores among the dental students of different academic year except 3<sup>rd</sup> year students. Increased psychological morbidity among 3<sup>rd</sup> year

students may be due to consequences of more negative events and poor academic performance in examination. Previously done studies with GHQ-12 reported varying results. One study showed no significant difference between the first- and fourth-year students according to score of GHQ-12 [9].

In this study, we found that those having insufficient family income scored higher beyond cut-off point in GHQ-28 than those having sufficient income. So, financial problem is one of the major sources of stress among dental students that was also found in other study [9].

Our dental college is located in a rural area, far away from the city. There is a scarcity of recreational facility within the campus. Most of dental student are coming from Kolkata, capital of west Bengal. Depression and anxiety have been associated with lack of time for other activities and socialization according to several studies examining the relationship between sources of stress and psychological morbidity in medical students [9]. The increasing availability of different facilities for recreation as well as increasing effort to engage themselves in socialization can prevent psychiatry morbidity.

## CONCLUSION AND RECOMMENDATIONS

Mental health problems among students of professional courses have been gradually increasing in recent years. The findings of our study can't be generalized for all professional like medical and dental students, since our study sample was small; other independent variables like relationship with family members and friend, exposure to emotional trauma, and perception of body image etc. are not included. However, the study variables can guide other researchers in future studies on the mental health status of dental and other health professionals. As our limitation, we can also say that we have not done the both way comparison of GHQ score among students of different academic years. In our study, "academic achievement" and "presence of a negative event in the last year" were taken as the main factors affecting the psychological wellbeing of dental students. From this study we found that negative events like death or loss of relation as well as financial scarcities had a strong impact upon the student to have psychiatric morbidity.

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