# PREVALENCE AND CORRELATES OF PSYCHIATRIC PROBLEMS AMONG ENGINEERING STUDENTS

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## ABSTRACT

**INTRODUCTION:** Mental health among students represents an important and growing public health concern. College is a place where student learns new experiences which play a vital role in physical as well as psychological growth for the identity consolidation. Engineering students experience frequent psychological distress as of various underlying reasons leading to psychiatric disorders including anxiety, depression, substance use etc.

**MATERIAL AND METHODS:** The final sample consisted of 196 students (1st year 50, 2nd year 51, 3rd year 48 and final year 47) from the Malviya National Institute of Technology (MNIT) Jaipur, the premier engineering college of Rajasthan, India. Study was conducted in two phases. In first phase, engineering students were administered socio-demographic data sheet and GHQ-60 (General Health Questionnaire) hindi version to ascertain the extent of psychiatric illnesses. False positive cases were dropped and in second phase the diagnosed students with psychiatric problems and control group were individually administered a battery of tests to determine the role of various possible causative factors. Scores obtained on different measures were arranged as per the requirement of research design and statistical procedure.

**RESULTS**: Out of all the subjects, 24.49% had some psychiatric disorders. Psychiatric disorder was highest i.e. 32% in 1st year students and overall in 36.60% of female students. Statistically significant differences were noted on various applied tools.

**CONCLUSION:** Students who had higher scores on GHQ-60 scale had more neurotic problems, poor coping skills and abnormal personality traits and had high psychiatric morbidity than the vice versa group.

**KEY WORDS:** Mental health, Engineering students, Psychiatric problems

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## INTRODUCTION

Adolescence is the period of increased awareness of personal identity and individual characteristics. It is the developmental phase that spans the transition period from the state of dependency to self-reliance, decision making and acquiring of basic training to become a good professional and financially viable person. World Health Report (2000) says that 20% of children and adolescents suffer from a disabling mental illness worldwide.[1] It is mostly during this stage that students make up their mind as to what they want to achieve in life. The students struggle with the parent`s wish to see them as doctors, engineers, chartered accountants etc. in the future without considering their natural strengths and weakness.

It is during the late adolescence (17+ year of age) that a student starts attending college for higher studies. College life is full of opportunity to enter into new experiences, to explore new relationship and to feel new resources of inner strength and ability. Although the family is the primary socializing agency in the life of the school going child, the college years bring him the long journey of various experiences. As a consequence of these, students frequently experience psychological distress leading to various psychiatric disorders including anxiety, depression, substance use, etc.

The effect of engineering education on the individual student is affected by the frequent emotional, traumatic and stressful process during the preparation for the branch chosen, college chosen, and class ranking which become the goal rather than the learning and preparation for later professional training itself. Studying the relevant literature shows that engineering students due to their specialized nature of education training are subject to more stress than their counterparts. Though some classes of students have been covered extensively for their psychiatric disorders for e.g. medical students, in which various studies shows that as many as one quarter of medical students seek a psychiatric consultation before graduation from medical school.[2] As no large scale studies have been carried yet so far in the case of engineering students, it appears prudent to deal with the subject.

## MATERIAL AND METHODS

The sample of the study were 200 students, 50 each from every year that is (1st, 2nd, 3rd, and final year) from the MNIT, Jaipur the premier engineering college of Rajasthan, India. They were enrolled for the study after getting permission and ethical clearance from the respective authority. At the onset of the study, the subjects were explained about the purpose of the study and informed consent was taken. Students refusing to participate in the study and whose information was incomplete were excluded from the study.

Study was conducted in two phases. In first phase, engineering students from each year (estimated sample size of 50 students in each year, total 200 in number) were administered socio-demographic data sheet and GHQ-60, Hindi version (Gautam and Nijhawan, 1982)[3] to ascertain the extent of psychiatric illnesses among engineering students. On the basis of these questionnaire probable risky cases (who scored 12 or above on GHQ-60) of psychiatric problems were detected. Thereafter these positive cases were personally interviewed to ascertain "Psychiatric Caseness" in these screened subjects. Diagnosis was made in consultation with a qualified psychiatrist according to the ICD-10. False positive cases were dropped.

In second phase, the diagnosed students with psychiatric problems and 30 students randomly selected out of the healthy engineering students (GHQ score less than 12) for the control group were individually administered to battery of tests like Hindi version (Bhatt & Srivastava, 1974) of Middlesex Hospital Questionnaire (MHQ) (Crown & Crisp, 1966)[4], Coping Response Inventory (Moos, 1992) [5] and International Personality Disorder Examination for W.H.O (IPDE) to determine the causative role of various factors including neuroses, coping skills and personality disorders respectively. All the protocols were scored as per the guidelines given in the manuals of the respective tests. Scores obtained on different measures were arranged as per the requirement of research design and statistical procedure.

## RESULTS

The final sample consisted of 196 out of initially selected 200 engineering students (1st year 50, 2nd year 51, 3rd year 48 and final year 47) due to various reasons like non-availability, non-cooperation etc. Out of 196 students, 60 students scored equal or more than12 on GHQ-60 Hindi version (Gautam and Nijhawan, 1982) and out of them 12 students were not having any psychiatric morbidity after they were interviewed by a psychiatrist and were considered as false positive.

Out of 196 students studied, forty eight i.e. 24.49% had some psychiatric disorders. When students of individual year were studied, it was found that in 1st year the psychiatric disorder was most prevalent being 32%. In subsequent years the percentage of psychiatric disorder was 17.65% in 2nd year students, 20.83% in 3rd year students and 27.66% in 4th year students respectively.

When the prevalence of psychiatric disorder was compared in gender group, in the student of 1st year, 6 out of 9 female students (66.67%) had some psychiatric disorder. In subsequent years the percentage of female students having psychiatric disorder has been shown as in 2nd year: 18.18%;3rd year: 27.27%; 4th year: 40% and overall 36.59%. Whereas in male student the prevalence was lower than the female students(1st year: 24.39%; 2nd year: 17.50%; 3rd year: 18.92%; 4th year: 24.32% and overall 21.29%) as shown in table

**Table1: Prevalence of psychiatric problems in engineering college students**

| S. No. | Groups | | M=Male Students; F=Female Students; N=Total Students | | | | |
|---|---|---|---|---|---|---|---|
| | | | 1st Year | 2nd Year | 3rd Year | 4th Year | Total |
| 1. | Number of Students with GHQ 12 i.e. Mentally Unhealthy Students | M | 12 | 8 | 9 | 12 | 41 |
| | | F | 7 | 4 | 3 | 5 | 19 |
| | | N | 19 | 12 | 12 | 17 | 60 |
| 2. | False Positives Based on Psychiatric Interview | M | 2 | 1 | 2 | 3 | 8 |
| | | F | 1 | 2 | 0 | 1 | 4 |
| | | N | 3 | 3 | 2 | 4 | 12 |
| 3. | Actual Number of Students with Psychiatric Problems | M | 10 | 7 | 7 | 9 | 33 |
| | | F | 6 | 2 | 3 | 4 | 15 |
| | | N | 16 | 9 | 10 | 13 | 48 |
| 4. | Total Number of Students | M | 41 | 40 | 37 | 37 | 155 |
| | | F | 9 | 11 | 11 | 10 | 41 |
| | | N | 50 | 51 | 48 | 47 | 196 |
| 5. | Rate of Prevalence of Psychiatric Disorders in % in Engineering Students | M | 24.39 | 17.50 | 18.92 | 24.32 | 21.29 |
| | | F | 66.67 | 18.18 | 27.27 | 40.00 | 36.59 |
| | | N | 32.00 | 17.65 | 20.83 | 27.66 | 24.49 |

The scores on MHQ for mentally unhealthy engineering students (MUES)of 1st year; 2nd year; 3rd year, 4th year and control were compared, theywere significantly different among and within group on six out of seven measure of MHQ except Hysterical Neurosis as shown in table 2.

**Table 2: Comparison of scores on different measures of MHQ -ANOVA**

| Domain of MHQ | Group being compared | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| Free-Floating Anxiety (FFA) | Between Group | 127.101 | 4 | 31.7758 | 15.584 | .000 |
| | Within Groups | 148.848 | 73 | 2.039 | | |
| | Total | 275.949 | 77 | - | | |
| Obsessional traits and symptoms (OBS) | Between Group | 34.776 | 4 | 8.694 | 8.424 | .000 |
| | Within Groups | 75.339 | 73 | 1.032 | | |
| | Total | 110.115 | 77 | - | | |
| Phobic Anxiety (PHO) | Between Group | 36.188 | 4 | 9.047 | 9.747 | .000 |
| | Within Groups | 67.761 | 73 | .928 | | |
| | Total | 103.949 | 77 | - | | |
| Somatic concomitants of anxiety (SOM) | Between Group | 25.589 | 4 | 6.397 | 2.935 | .026 |
| | Within Groups | 159.090 | 73 | 2.179 | | |
| | Total | 184.679 | 77 | - | | |
| Neurotic Depression (DEP) | Between Group | 061.304 | 4 | 40.326 | 32.656 | .000 |
| | Within Groups | 90.145 | 73 | 1.235 | | |
| | Total | 251.449 | 77 | - | | |
| Hysterical personality traits (HYS). | Between Group | 3.187 | 4 | .797 | .813 | .521 |
| | Within Groups | 71.531 | 73 | .980 | | |
| | Total | 74.718 | 77 | - | | |
| Neurotic | Between Group | 1443.942 | 4 | 360.985 | 21.704 | .000 |
| | Within Groups | 1214.173 | 73 | 16.633 | | |
| | Total | 2658.115 | 77 | - | | |

Similarly when Groups of MUES of 1st year; 2nd year; 3rd year, 4th year and control were compared than Scores were significantly different among and within group on seven out of eight measure of Coping Response Inventory (CRI) i.e. except seeking rewards (SR) i.e. behavioral attempts to get involved in substitute activities and create new source of information as shown in table 3.

**Table 3: Comparison of scores on different measures of CRI - ANOVA**

| Domain of CRI | Group being compared | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| Logical Analysis (LA) | Between Group | 541.187 | 4 | 135.297 | 51.817 | .000 |
| | Within Groups | 190.608 | 73 | 2.611 | | |
| | Total | 731.795 | 77 | - | | |
| Positive Reappraisal (PR) | Between Group | 169.185 | 4 | 42.296 | 18.296 | .000 |
| | Within Groups | 168.763 | 73 | 2.312 | | |
| | Total | 337.949 | 77 | - | | |
| Support Guidance(SG) | Between Group | 186.788 | 4 | 46.697 | 17.334 | .000 |
| | Within Groups | 196.661 | 73 | 2.694 | | |
| | Total | 383.449 | 77 | - | | |
| Problem Solving(PS) | Between Group | 131.724 | 4 | 32.931 | 18.905 | .000 |
| | Within Groups | 127.161 | 73 | 1.742 | | |
| | Total | 258.885 | 77 | - | | |
| Cognitive Avoidance(CA) | Between Group | 38.721 | 4 | 9.680 | 3.883 | .006 |
| | Within Groups | 181.997 | 73 | 2.493 | | |
| | Total | 220.718 | 77 | - | | |
| Resigned Acceptance(AR) | Between Group | 132.916 | 4 | 33.229 | 14.743 | .000 |
| | Within Groups | 164.532 | 73 | 2.254 | | |
| | Total | 297.449 | 77 | - | | |
| Seeking Reward(SR) | Between Group | 10.153 | 4 | 2.538 | 1.030 | .398 |
| | Within Groups | 179.962 | 73 | 2.465 | | |
| | Total | 190.115 | 77 | - | | |
| Emotional Discharge (ED) | Between Group | 635.173 | 4 | 158.793 | 88.457 | .000 |
| | Within Groups | 131.045 | 73 | 1.795 | | |
| | Total | 766.218 | 77 | - | | |

Scores were significantly different when the Groups of Mentally Unhealthy Engineering Students of 1st year; 2nd year;3rd year, 4th year and control were compared among and within group on all the nine measure of IPDE-ICD-10 as shown in table 4 below.

**Table 4: Comparison of scores on different measures of IPDE-ICD-10 - ANOVA**

| Domain of IPDE | Group being compared | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| PARNOID | Between Group | 19.976 | 4 | 4.994 | 9.410 | .000 |
| | Within Groups | 38.741 | 73 | .531 | | |
| | Total | 58.718 | 77 | - | | |
| SCHIZOID | Between Group | 59.583 | 4 | 14.896 | 24.566 | .000 |
| | Within Groups | 44.263 | 73 | .606 | | |
| | Total | 103.846 | 77 | - | | |
| DISSOCIAL | Between Group | 7.659 | 4 | 1.915 | 4.537 | .002 |
| | Within Groups | 30.803 | 73 | .422 | | |
| | Total | 38.462 | 77 | - | | |
| IMPULSIVE | Between Group | 26.916 | 4 | 6.729 | 14.865 | .000 |
| | Within Groups | 33.045 | 73 | .453 | | |
| | Total | 59.962 | 77 | - | | |
| BORDERLINE | Between Group | 16.497 | 4 | 4.124 | 11.154 | .000 |
| | Within Groups | 26.990 | 73 | .370 | | |
| | Total | 43.487 | 77 | - | | |
| HISTRIONIC | Between Group | 39.722 | 4 | 9.930 | 21.759 | .000 |
| | Within Groups | 33.317 | 73 | .456 | | |
| | Total | 73.038 | 77 | - | | |
| ANANKASTIC | Between Group | 17.061 | 4 | 4.265 | 6.683 | .000 |
| | Within Groups | 46.593 | 73 | .638 | | |
| | Total | 36.654 | 77 | - | | |
| ANXIOUS | Between Group | 35.182 | 4 | 8.796 | 12.842 | .000 |
| | Within Groups | 49.997 | 73 | .685 | | |
| | Total | 85.179 | 77 | - | | |
| DEPENDENT | Between Group | 20.105 | 4 | 5.026 | 7.794 | .000 |
| | Within Groups | 47.074 | 73 | .645 | | |
| | Total | 67.179 | 77 | - | | |

## DISCUSSION

The present study was conducted to study prevalence of psychiatric disorder along with the psychological determinant of mental health of engineering students. Several measures of mental health in these students were investigated including the role of neurotic manifestation, personality constellation and coping strategies.

One of the significant findings emerged from this study relates to considerable high prevalence rate of psychiatric problems in engineering students i.e. overall 24.49% and highest i.e. 32% in 1st year. The plausible explanation of this high rate of psychiatric problem may be several like Engineering College environment being more competitive, more stressful and less cooperative one, anticipation and fear of being ragged, comments on dress code and personality, interpersonal attraction towards opposite sex and fear of lengthy and broad curriculum etc. Similar inferences have been drawn by other researchers (Chandrasekher 1980; Okasha, et al. 1985; Cherian 1998).[6-8]

Prevalence rate of psychiatric problems in engineering students was more in case of female students as compared to male students i.e. 36.59 % vs. 21.29 % of gender wise total students. This suggests that women may be experiencing more distress than their male counterparts. Steppacher and Mauser (1974) and Lloyd et al. (1980) also found that the stressors or professional school are more detrimental for women than for men.[9,10]

Mentally unhealthy engineering students significantly differed on various scale of MHQ. It was observed that they have significantly scored more on overall neurosis and mostly five of its sub measures (except Hysterical Neurosis and rarely Somatic Anxiety) when compared with healthy students. More or less similar inferences have been drawn by others but using different measures (Lloyd et al. 1980; Firth 1986).[10,11]

Coping Response Inventory (CRI) result analysis shows that scores were significantly different between group on seven (except SR i.e. Seeking Reward) out of eight measure of CRI viz LA (Logical Analysis), PR (Positive Reappraisal), SG (Seeking Guidance), PS (Problem Solving), CA (Cognitive Avoidance), RA (Resigned Acceptance) and ED (Emotional Discharge). It is understandable that healthy or approach coping responses are employed by mentally healthy students whereas avoidance coping response were more employed by unhealthy students. These observations are in line with other investigators (Moos R 1993; Xing JG 1996).[5,12]

Role of personality disorders assessed by IPDE-ICD-10 reveals that constellation of personality disorders played a major role in mentally unhealthy engineering students. All the nine subtypes of personality disorders turn out to be significantly different between the groups (Paranoid, Schizoid, Dissocial, Impulsive, Borderline, Histrionic, Anankastic, Anxious and dependent personality disorders). Thus, we can safely infer that mentally unhealthy students have significantly more personality disorders than their counter parts who are mentally healthy. More or less, similar findings have been drawn by some researchers employing different measure of personality disorders.[10,13,14]

Costello et al in the review of epidemiology of psychiatric disorders have opined that "onset before adulthood may be a characteristic of the majority of adult mental disorders".[15] Psychiatric epidemiologists should move beyond their current opinion and policies to develop collaborations with their colleagues involved in preventing mental illness as well as with social policy analysts, who are currently at the fore front of developing, implementing and evaluating intervention.[16] This also indicates that with timely psychiatric intervention, students can be helped to achieve better academic and other achievements.

## CONCLUSION

On the basis of the findings of this study it can be concluded that prevalence of psychiatric problems in engineering students is in line with the earlier studies done on general population and on other professional students. Socio demographic factor like gender were found to be associated with these disorders. Students differed on various measures of neurosis and unhealthy coping strategies and personality disorders were found to be significantly contributing to these disorders. An attempt should be made to overcome these factors enabling engineering students to realize their actual potential in the field of engineering.

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