Original Article

ROLE OF SOCIO-DEMOGRAPHIC FACTORS, STRESSFUL LIFE EVENTS, COLLEGE AND FAMILY ENVIRONMENT IN CAUSATION OF PSYCHIATRIC PROBLEMS IN ENGINEERING STUDENTS.

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Abstract

Introduction: Professional college provides various opportunitiesfor the all-round development of the students but they may also be subjected to various kinds of stressors. Engineering educational system is highly competitive and the students may face difficulties in both academic and personal life, sometime leading to psychiatric disorders.

Material and Methods: This is a cross-sectional descriptive study from Malviya National Institute of Technology (MNIT), Jaipur the premier engineering college of Rajasthan and India. 196 students (1st year 50, 2nd year 51, 3rd year 48 and final year 47) were the subject for this study. In first phase, socio-demographic data sheet and GHQ-60 hindi version to ascertain the extent of psychiatric illnesses was administered. False positive cases were dropped and then diagnosed students with psychiatric problems and control group were administered tests to find out the role of probable contributing factors. Results were analyzed and suitable statistical procedure was applied.

Result and Conclusion: Forty eight out of one hundred ninety six students i.e. 24.49% had some psychiatric disorders. Engineering students from lower income group, Hindi as their medium of study before entering Engineering College than students with English background, students from nuclear family than from joint family and students from urban background has higher rate of psychiatric illness in all the groups. Family and college environment was also a contributing factor.

Key words:*engineering students, stress, psychiatric problems, environment.*

Introduction

College life is full of opportunity for students to enter into new experiences, to explore new relationships, to feel new resources of inner strength and ability, reaching the prime of physical health and realizing with a feeling of pride of their sense of independence and to venture out into the world with great zeal to explore the world around them which hitherto they had only envisioned through their parents eyes. During the college period a number of challenges are to be faced which arise from increased social expectations, biological maturation, peer pressure, family moves, parental fighting and divorce, parental substance abuse, sexual and physical maltreatment etc. Adolescents, those who cannot cope with stresses or for whom these stresses become too severe, have to make a lot of effort to cope up with these stressors. If the attempts to meet such challenges are maladaptive they can result in psychopathology, which ultimately plunges them in to the realm of emotional and behavioral disorder or they tend towards drug abuse. Some Indian studies have also

correlated the onset of life events and precipitation of psychiatric illness.[1,2]

College are the institution which permit the study of comparable inner problem under demonstrable condition as the student are of nearly the same age, intellect and converging set of motivation, and who compete in studies and related other task chosen by them. Engineering educational system has a high competition and in the face of difficulties in both academic and personal life, the engineering student may be subjected to various stressors leading to maladjustment and even psychiatric problems.

This study is to highlight the role of socio-demographic factors, effect of stressful life events, college and family environment of the engineering students in the causation of the psychiatric problems.

Methods

Sample Design and Procedure:

Two hundred students, fifty each from every year (Bachelor of engineering course is of four years duration) from the Malviya National Institute of Technology (MNIT), Jaipur, India were the subject for this study.Necessary permission to conduct the study and ethical clearance was obtained from the concerned authority.After getting the informed consent from participants, a battery of tests was administered. Socio-demographic data sheet was completed by participants and General health questionnaire (GHQ-60) hindi version (Gautam and Nijhawan, 1982)[3] was administered to find the extent of psychiatric morbidity among engineering students. One hundred ninety six students completed the study (1^{st} year 50, 2^{nd}year 51, 3^{rd}year 48 and 4^{th}year 47). Students of whom, information was incomplete or were unwilling to participate were excluded from the study.

Probable risky cases (who scored 12 or above on GHQ-60) of psychiatric problems were detected and were personally interviewed by a consultant psychiatrist according to the ICD-10 criteria to ascertain "Psychiatric Caseness" and false positive cases were dropped.The diagnosed students with psychiatric problems and 30 students randomly selected out of the healthy engineering students (GHQ score < 12) for the control group were individually administeredPresumptive Stressful Life Events Scale (PSLES) by Gurmeet Singh et al. 1984[4],aself-designed scale approved by department of psychiatry to assess the college campus environment and Hindi Version (Joshi, 1984) of family environment scale (Moos, 1994)[5] revised. Findings were compared for each year of the students to determine the role of various factors in causation of psychiatric problems in engineering students. Scores obtained on different measures were arranged as per the requirement of research design and statistical analysis. All the protocols were scored as per the guidelines given in the manuals for the respective tests.

Results:

One hundred ninety six engineering students (1^{st} year 50, 2^{nd} year 51, 3^{rd} year 48 and final year 47) data was finally available for the analysis. The parameters studied were family type, language of academic studies, domicile distribution, family income, Stressful Life Events, College campus environment and Family environmentalong with prevalence of psychiatric problems.

Forty eight out of one hundred ninety six students i.e. 24.49% had some psychiatric disorders. Prevalence of psychiatric disorder was highest i.e. 32.00% in 1^{st} year, 17.65% in 2^{nd} year students, 20.83% in 3^{rd} year students and 27.66% in 4^{th} year student's respectively. The prevalence of psychiatric disorders in male students was lower than the female students (1^{st} year: 24.39% vs 66.67%; 2^{nd} year: 17.50% vs 18.18%; 3^{rd} year: 18.92% vs 27.27%; 4^{th} year: 24.32% vs 40.00% and overall 21.29% vs 36.59%) as in table 1.

Table 1: Prevalence of psychiatric problems in Engineering College students.

Sl. No.	Groups		1st Year	2nd Year	3rd Year	4th Year	Total
1..	Number of Students with Psychiatric Problems (Based on GHQ ≥12 and after deleting false positives cases based on psychiatric interview)	M F N	10 6 16	7 2 9	7 3 10	9 4 13	33 15 48
2.	Total number of students	M F N	41 9 50	40 11 51	37 11 48	37 10 47	155 41 196
3.	Rate of prevalence of psychiatric disorders in % in Engineering students	M F N	24.39 66.67 32.00	17.50 18.18 17.65	18.92 27.27 20.83	24.32 40.00 27.66	21.29 36.59 24.49

As shown in table no.2, it was found that 44.1% of the students of 1st year from nuclear family were mentally unhealthy in comparison of 6.25% from joint family. Similarly in 2nd year (22.2% vs. 6.7%); 3rd year (23.5% vs. 14.3%) and 4th year (35.5% vs. 12.5%) was distribution of mentally unhealthy students in various years of study. In total 31.1% student from nuclear family were mentally unhealthy whereas 9.8% students from joint family were found to be mentally unhealthy.

Table2. Distribution of Family type of Mentally Healthy and Unhealthy Engineering Students

Sl. No.	Groups		First Year	Second Year	Third year	Fourth Year	Total	Control Group
1	Mentally Unhealthy MaleStudents	A B N	9 1 10	6 1 7	3 4 7	7 2 9	25 8 33	- - -
2	Mentally Unhealthy Female Students	A B N	6 0 6	2 0 2	2 1 3	4 0 4	14 1 15	- - -
3.	Total Mentally Unhealthy Students (%)	A B N	15(44.1) 1 (6.25) 16(32.0)	8(22.2) 1 (6.7) 9(17.6)	8(23.5) 2 (14.3) 10(20.8)	11(35.5) 2 (12.5) 13(27.7)	42(31.1) 6 (9.8) 48(24.5)	- - -
4.	Total Numbers of Students i.e. Grand Total	A B N	34 16 50	36 15 51	34 14 48	31 16 47	135 61 196	21 9 30

A=Students from Nuclear Family; B= Students from Joint Family; N=Students from Total No. of Family

On the basis of study language as shown in table 3, 31.3% of students studied from Hindi medium were mentally unhealthy whereas 14.8% were mentally unhealthy coming from English medium school. When individual year of mentally unhealthy student were compared as from Hindi vs. English

medium, in 1st year it was 35.3% vs. 25.0%. Similarly in 2nd year, 3rd year and 4th year the percentage were 30.4% vs. 7.1%, 21.6% vs. 18.2% and 42.8% vs. 15.4% respectively.

Table3. Language distribution of Mentally healthy and unhealthy Engineering students

Sl. No.	Groups		First Year	Second Year	Third year	Fourth Year	Total	Control Group
1	Mentally Unhealthy Male Students	A B N	2 8 10	2 5 7	2 5 7	3 6 9	9 24 33	- - -
2.	Mentally Unhealthy Female Students	A B N	2 4 6	0 2 2	0 3 3	1 3 4	3 12 15	- - -
3.	Total Mentally Unhealthy Students (%)	A B N	4 (25.0) 12(35.3) 16(32.0)	2(7.1) 7 (30.4) 9(17.6)	2(18.2) 8 (21.6) 10(20.8)	4 (15.4) 9 (42.8) 13 (27.7)	12(14.8) 36(31.3) 48(24.5)	- - -
4.	Total Numbers of Students i.e. Grand Total	A B N	16 34 50	28 23 51	11 37 48	26 21 47	81 115 196	14 16 30

A=Students from English medium; B= Students from hindi medium; N=Total Students

Domicile distribution was studied and 28.3% of student who were mentally unhealthy were from urban background whereas 11.3% were from rural background. In 1st year 34.2% were mentally unhealthy coming from urban background in comparison of 25% from rural background. Similarly in 2nd year, 3rd year, 4th year (Urban vs. Rural were 20% vs. 9.1%; 23.8% vs. 00% and 37.5% vs. 6.7%) respectively were mentally unhealthy as shown in table 4.

Table 4. Domicile distribution of mentally healthy and unhealthy Engineering students

Sl. No.	Groups		First Year	Second Year	Third year	Fourth Year	Total	Control Group
2.	Mentally Unhealthy Male Students	A B N	8 2 10	6 1 7	7 0 7	8 1 9	29 4 33	- - -
4.	Mentally Unhealthy Female Students	A B N	5 1 6	2 0 2	3 0 3	4 0 4	14 1 15	- - -
6.	Total Mentally Unhealthy Students (%)	A B N	13(34.2) 3 (25.0) 16(32.0)	8 (20.0) 1 (9.1) 9 (17.6)	10(23.8) 0 (0.0) 10(20.8)	12(37.5) 1 (6.7) 13 (27.7)	43(28.3) 5(11.3) 48(24.5)	- - -
7.	Total Numbers of Students i.e. Grand Total	A B N	38 12 50	40 11 51	42 6 48	32 15 47	152 44 196	23 7 30

A=Students from Urban back ground; B= Students from rural back ground; N=Total Students

Family income distribution is shown in table 5 and it was found to be related to the presence of unhealthy mental state in the students. Students, whose monthly family income was less than Indian Rs 6000, 70.3 % were mentally unhealthy; in students, whose monthly family income was Rs 6000-Rs12000, 21.9% were mentally unhealthy and students whose monthly family income was more than Rs12000, 8.4% were mentally unhealthy.

Table 5. Family income distribution of mentally healthy and unhealthy Engineering students

Sl. No.	Groups		First Year	Second Year	Third year	Fourth Year	Total	Control Group
2.	Mentally Unhealthy Male Students	A B C N	5 3 2 10	4 2 1 7	4 2 1 7	6 2 1 9	19 9 5 33	- - -
4.	Mentally Unhealthy Female Students	A B C N	3 2 1 6	1 1 0 2	1 1 1 3	2 1 1 4	7 5 3 15	- - -
6.	Total Mentally Unhealthy Students (%)	A B C N	8 (80.0) 5 (26.3) 3 (14.3) 16 (32.0)	5 (55.6) 3 (17.6) 1 (4.0) 9 (17.6)	5 (71.4) 3 (23.0) 2 (7.1) 10 (20.8)	8 (72.7) 3 (20.0) 2 (9.5) 13 (27.7)	26(70.3) 14(21.9) 8 (8.4) 48(24.5)	- - -
7.	Total Numbers of Students i.e. Grand Total	A B C N	10 19 21 50	9 17 25 51	7 13 28 48	11 15 21 47	37 64 95 196	11 10 9 30

A=Students with family with income < Rs. 6,000 per month**;** B= Students with family with income Rs. 6000- Rs. 12,000 per month; C=Students with family with income > Rs.12,000 per month ; N=Total Students

When Groups of Mentally Unhealthy Engineering Students of 1st year; 2nd year; 3rd year, 4th year and control were compared than the Scores were not statistically different on PSLES while score were significantly different among and within group on college environment scale as shown in table 6 .

Table 6. Comparison of Scores on different measures of Presumptive Stressful Life Event Scale (PSLES) and College Environment Scale (CES) (ANOVA)

Domain	Group	Sum of Squares	df	Mean Square	F	Sig.
PSLES	Between Group	11.818	4	2.954	2.211	.076
	Within Groups	97.529	73	1.336		
	Total	109.346	77	-		
CES	Between Group	101.551	4	25.388	9.563	.000
	Within Groups	193.796	73	2.655		
	Total	295.346	77	-		

As shown in table 7, the scores were statistically significantly different among and within group on nine out of ten measure of FES i.e. except moral religious emphasis in their family when the Groups of Mentally Unhealthy Engineering Students of 1st year; 2nd year; 3rd year, 4th year and control were compared .

Table 7. Comparison of scores on different measures of family environment scale (FES) (ANOVA)

Domain of FES	Group	Sum of Squares	df	Mean Square	F	Sig.
COHESION	Between Group	59.947	4	14.987	13.016	.000
	Within Groups	84.053	73	1.151		
	Total	144.00	77	-		
EXPRESSIVE	Between Group	9.876	4	2.469	2.775	.033
	Within Groups	64.957	73	.890		
	Total	74.833	77	-		
CONFLICT	Between Group	190.253	4	47.563	84.284	.000
	Within Groups	41.196	73	.564		
	Total	231.449	77	-		
INDEPENDENT	Between Group	149.063	4	37.266	35.306	.000
	Within Groups	77.052	73	1.056		
	Total	226.115	77	-		
ACHIEVEMENT	Between Group	139.899	4	34.975	59.413	.000
	Within Groups	42.973	73	.589		
	Total	182.872	77	-		
INTELLECTUAL	Between Group	17.310	4	4.327	5.829	.000
	Within Groups	54.190	73	.742		
	Total	71.500	77	-		
ACTIVE	Between Group	29.570	4	7.393	12.459	.000
	Within Groups	43.314	73	.593		
	Total	72.885	77	-		
MORAL	Between Group	5.396	4	1.349	1.626	.177
	Within Groups	60.566	73	.830		
	Total	65.962	77	-		
ORGANISATION	Between Group	36.984	4	9.246	16.518	.000
	Within Groups	40.862	73	.560		
	Total	77.846	77	-		
CONTROL	Between Group	55.599	4	13.900	24.608	.000
	Within Groups	41.234	73	.565		
	Total	96.833	77	-		

Discussion

This cross-sectional descriptive study was conducted to study prevalenceof psychiatric disorders and determinants of mental health of engineering students. 196 students (1st year 50, 2nd year 51, 3rd year 48 and final year 47) were the subject for this study.

Overall prevalence rate of psychiatric problems in engineering students was found to be 24.49% and was highest i.e. 32% in

1st year students. This can be because of engineering educational environment being more competitive, more stressful and less cooperative one, fear of being ragged, personal critical comments by colleagues, interpersonal attraction towards opposite sex and fear of exhaustive curriculum etc.Other researchers have also found similar findingsin their studies.[6,7,8]Female students had higher prevalence rate of psychiatric problems in comparison to male students i.e. 36.59 % vs. 21.29 %. Previous studies also have revealed that stressors or professional school are more favorable for men than for women. [9, 10]

Family type of sample affected the mental status as prevalence rate of psychiatric problems was higher in students from nuclear family than from joint family in all the groups as 44.1% vs. 6.25% in 1st year, 22.2% vs. 6.7% in 2nd year, 23.5% vs. 14.3% in 3rd year, 35.5% vs. 12.5% in 4th year and 31.1% vs. 9.8% of total student's. These findings are in line with previous studies in which being from joint family was found to be protective against psychiatric morbidity.[11.12]

Higher prevalence of Psychiatric problem was there in students with Hindi as their medium of study before entering Engineering college than students with English background as 35.3% vs. 25.0% in 1st year, 30.4% vs. 7.1% in 2nd year, 26.1% vs. 18.2% in 3rd year, 42.9% vs. 15.4% in 4th year and 31.3% vs. 14.8% of total student's. This can be because of difficulty in understanding the engineering curriculum which is entirely in English. They felt shy of mixing with other students and asking their problems from teacher in the class. They fared poorly in the examination because of difficulty in expressing themselves in spite of knowing the answers correctly; similar findings have been drawn by other researchers. [13]

Engineering students from urban background had higher prevalence of Psychiatric problem than students from rural background as34.2% vs. 25.0% in 1st year, 20.0% vs. 9.1% in 2nd year, 23.8% vs. 0% in 3rd year, 37.5% vs. 6.7% in 4th year and 28.3% vs. 11.3% of total student's. This can be attributed to short comings of nuclear family and urban upbringing featuring lack of support from extended family member difficulty in mixing, remaining self centered more stresses and high expectation from each other etc. Similar findings have been drawn in past studies also. [13,14]

Engineering students from lower income group had highest rate of illness, middle income group has intermediate and higher income group has lowest prevalence of Psychiatric problems i.e. 70.3% vs. 21.9% vs. 8.4% of total student's.Family incomeplayed a vital role as it was observed that students from families with low and middle income were more prone to develop mental illnesses than those who belonged to high income group. Frustration and disappointment resulting because of unfulfilled needs as of less available money may lead to emotional disturbances and may be the reason for it.[13]Because of the homogeneity of the socio-economic status of professional students in the west; we have no comparable studies pointing out significance of such variables from the west.

As regards to contribution of psychological determinants in the development of emotional problems in engineering professional students at various levels, different trends have emerged. Life events were studied using presumptive stressful life event scale (PSLE by Gurmeet Singh et al. 1984) and no significant difference between the groups were observed on this scale using ANOVA but using't' test significant difference was observed between 3rd year vs. control and 4th year vs. control group hence finding were not as meaningful as that of the variable of family environment in this context. This is in line with what has been reported in the past by some researchers.[15,16]

As regards to Engineering College Environment mentally unhealthy students perceived engineering college environment as significantly more disturbing than their normal counterparts, suggesting it is not the environment or situation per-se but it would depend mainly as how one perceives it. Usually mentally unhealthy student will take it in a negative manner because of several conflicts, self concept, family background etc. he or she entertains with. There have been several studies indicating college environment stress in terms of type of syllabus, practical training, peer group, competition, teacher expectation all these contributes in the development of mental health problems in vulnerable person. [15,16,17]

The family environment scale (FES) assesses the social climates of all types of families. It focuses on the measurement and description among family members, on the directions of personal growth which are emphasized in the family, and on the basis organizational structure of the family.Scores were significantly different on 9 out of 10 measures (except moral religious emphasis in the family) viz Cohesion, Expressiveness, Conflict, Independence, Achievement Orientation, Intellectual Cultural Orientation, Active Recreational Orientation, Organization and Control; this is in line with common belief that family environment contributes in the developments of emotional problems.[17,18]

Conclusion

It can be concluded from the findings of this study that prevalence of psychiatric disorders is common in engineering students. Socio demographic factors like gender, family income and type, medium of instruction at the school level and domicile were found to be associated with these disorders. It was also found that those students whose family environment was healthy, attitude to college environment was positive and ability to handle the stressful life events was better were less affected by psychiatric disorders.Appropriate measures should be taken to correct the modifiable factors to help engineering students to fare better in their studies and to help them become better professional and asset to the Mankind.

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