

ORIGINAL PAPER

A Comparative Study of Psychiatric Symptoms in Engineering, Medical and Arts & Commerce College Students*Deshpande SS¹, Raje S², Majumdar R², Ghate M¹*¹Dept. of Psychiatry, Smt. Kashibai Navale Medical College and General Hospital, Narhe, Pune India 411041²Dept. of Community Medicine, MIMER Medical College, Talegaon Dabhade, India**Abstract**

Background: Mental disorders and mental health problems have increased considerably among young population in the past 20-30 years, which is disadvantageous to them as well as to the society. Many of these problems tend to persist into adulthood, thus requiring timely attention. **Methods:** Cross sectional study involving first year students of medical, engineering and arts & commerce colleges was undertaken. Clusters from three different vocations were selected at random to complete a stratified sample. A specially designed self-reporting questionnaire that included socio-demographic and health related parameters and Symptom Checklist -90R (Derogatis L.) were administered. **Results:** In all 445 students participated in the study. Overall prevalence of psychiatric cases as per SCL-90R norms was 17.07%, significantly more in male students and those in medical and engineering colleges. These students reported worse mood, less efficiency and more effort at work and irregular bowel habits compared to non-cases. The symptoms of psychopathology experienced were diverse. **Conclusion:** Psychopathology in terms of Psychiatric symptoms reported was greater in medical and engineering colleges. Simple mental health parameters correlated with positive case detection on SCL – 90R, which would be useful in case identification. We recommend using these by teachers, parents or primary health workers for timely identification of mental health problems in adolescents.

Keywords: Mental Health, Students, Adolescent Psychiatry, Psychopathology**Introduction**

World Health Organization (WHO) has defined adolescence as the period in which the individual progresses from the point of initial appearance of secondary sexual

characters to that of sexual maturity¹. The individual's psychological processes and unique patterns of individuality develop from those of a child to those of an adult. WHO defines mental health as a "state of well-being whereby individuals recognize

their abilities, are able to cope with the normal stresses of life, work productively and fruitfully, and make a contribution to their community”¹.

Lifetime prevalence of psychiatric illnesses is 15 -20% and is similar across the world^{2,3}. Nearly two thirds of people with diagnosable mental disorders do not seek treatment¹. Awareness that some behaviors like anger, violence or self harm in various ways like psychoactive substance dependence, self-neglect could be the symptoms of mental illnesses is lacking. Although mental disorders reflect psychiatric disturbance, adolescents may be affected more broadly by mental health problems. These include various academic, emotional and social difficulties during adolescent development which may adversely affect their quality of life emotionally, socially, and vocationally. The complex psychosocial morbidities of adolescents have been recognized as a threat to young generation⁴.

These mental health problems remain undetected for long, affecting functioning of this developing younger generation. They often also worsen to leading to Psychiatric illnesses. Mental disorders and mental health problems seem to have increased considerably among adolescents in the past 20-30 years. The rise has been driven by social change, including change in family structure, growing youth unemployment, and increasing educational and vocational pressures. There is growing recognition about possible continuation of these problems in adulthood^{5, 6}. Thus psychopathology in adolescence should not be regarded as normative. In this age, a young person more readily thinks of and acts on suicidal ideas⁷. Psychiatric illnesses can be diagnosed in up to 20% of the adolescents, which is a sizeable number^{3,8}.

Mental disorders may have more adverse long-term association with quality of life than do physical illnesses. Adolescent personality disorders may have a more adverse impact than psychiatric illnesses⁹.

In India, school mental health program and early intervention for psychotic disorders are priorities of research¹⁰. Research here needs to focus on integration of mental health care in primary health care settings. Development of mental health indicators could be important for this^{11, 12}. In an Indian study comparing stress among medical, engineering and nursing college students, Behere SP et al (2011) have reported higher clinically significant stress among medical and engineering college students than in nursing students¹³. The objectives of this study were i) to screen adolescents from various colleges undertaken by us, to study nature and magnitude of psychopathology among the adolescent college students; ii) to compare mental health and psychopathology among students studying in professional versus non-professional colleges; iii) to find recommendations for easy detection and designing preventive intervention for better mental health of these students in vulnerable age group

Methods

This was a cross sectional study which included 445 students studying in a semi urban area in which both rural and urban residents were represented. Considering the prevalence of psychiatric illnesses as reported by previous studies as 20% at $\alpha = .05$ and an absolute error of 4%, the estimated sample size is 385. For the purpose of having representations of students from various vocations, one cluster each from four different vocations was selected at random to complete a stratified sample. Students between the age 17 years to 19 years, studying in first year of medical,

engineering, and arts and commerce colleges were included, after obtaining their written consent. Once a batch (cluster) was selected at random, all the students belonging to that cluster were included in the sample. Thus there was 1 section of 93 students from commerce faculty, 1 section of 66 students from arts faculty, 1 batch of 100 students from medical college and 1 batch of 186 students from engineering college. Hence the total sample size was 445.

The research was carried over a total period of two years. Prior permission of the principals of respective colleges was obtained and written informed consent of individual student taken. The study was conducted around three months after beginning of their college when initial adjustment problems were settled.

A specially designed proforma for the study recorded basic socio-demographic information, including questions about their socio economic status as per a structured validated scale¹⁴, anthropometric measures, past and current clinical history, vegetative functions, addictions and various simple questions about mental health related parameters. These included prevalent mood, efforts perceived for day to day activities, perceived efficiency in work, and availability emotional support. Data pertaining to mental health was collected with the help of Symptom checklist –90R (SCL-90R) (L.Derogatis)¹⁵. This is a self-report symptom checklist designed to reflect the psychological symptom patterns of community, medical and psychiatric respondents. Each item is rated on a five-point scale of distress (0-4) ranging from “Not at all” to “extremely”. Its concurrent and discriminant validity have been established. It has been used widely in clinical and research contexts for screening and rating of symptoms. Invariance data

have been reported for this instrument concerning gender, social class and psychiatric diagnosis. SCL-90, which was a prototype for SCL-90R, has been used in Indian studies¹⁶.

Nine dimensions of psychopathology are included in this questionnaire along with some additional questions. The nine dimensions are somatisation, obsessive compulsive, interpersonal sensitivity, depression, anxiety, hostility, phobic anxiety, paranoid ideation and psychoticism. Global Severity Index (GSI) is the best single indicator of the current level or depth of overall psychological distress¹⁵. It can be used with adolescents, as separate norms for adolescent non-patients have been developed. Operationally case has been defined as per t 63 cut off for each subject group as directed in the manual of this tool¹⁵.

Statistical analysis

The data included age, sex, socio economic status, BMI of these students. History of major illnesses in last 1 month, bowel habits, efforts perceived for day to day activities, perceived efficiency in work, and availability emotional support were the other questions asked, which are related to health in general. They were asked to rate their psychiatric symptoms as per SCL-90R Tool. Prevalence of symptoms of Psychopathology was compared between cases and non cases as well as between students from professional and non professional courses using unpaired t test. Correlation between BMI and GSI were calculated using Pearson's correlation coefficient. Other variables like mental health related variables, addictions and vegetative functions were compared among those who qualify as cases and those who do not, with the help of SPSS. Standard normal variant and p values were calculated.

Students from professional courses i.e. medical and engineering were compared and contrasted with students from Arts and Commerce College who apparently have relatively less academic stress.

Results

Socio-demographic information

In all 445 students between the age group 17 years to 19 years from three colleges studying in first year of graduation participated in this study. The male: female

ratio of the total number of students was 1.8:1. Students from professional colleges i.e. Medical and Engineering courses were 286 in number and those from Non professional courses such as Arts and Commerce were 159. Cases as defined by SCL 90 R were 76 out of 445 (17.07%)

Mental and physical health related parameters

Table 1 shows prevalence of different mental and physical health related parameters in cases and non-cases.

Table 1. Prevalent mental and physical health related parameters in cases and non cases

Parameter	Total (459) (%)	Cases (76)	Non cases (383)	Z	p
Believing in God	410 (89.32)	69 (90.8)	341 (91.1)	0.08	0.46
Meditate regularly	269 (58.6)	46 (60.5)	223 (58.2)	0.37	0.35
Have a Close confident (Perceived emotional support/ social support)	344 (74.94)	54 (71)	290 (75)	0.57	0.28
Good appetite	243 (52.94)	38 (50)	205 (53.6)	0.64	0.26
Regular Exercise	252 (54.9)	43(56.6)	209 (54.6)	0.32	0.37
Regular Bowel habits	383 (83.44)	51(67.1)	332 (86.7)	3.46	0.00**
Excellent efficiency at work	46 (10.02)	3 (3.9)	43 (11.2)	2.66	0.0**
Negligible efforts in routine work	383 (10.4)	3 (3.9)	44 (11.5)	2.75	0.00**
No Addiction	342 (74.5)	52(68.4)	290(75.7)	1.26	0.10

* indicate significant at $p < 0.05$

** indicate significant at $p < 0.01$

These questions were framed considering an Indian college going adolescent. Undertaking regular exercise, regular bowel habits, some kind of meditation, having good emotional support and staying away from any addictions are commonly followed norms for maintaining health. Socio-cultural beliefs do have significant impact on adolescent behavior.

Majority of students (89.3%) believed in GOD and 58.6% said that they meditate

regularly. While 74.9% students affirmed to have close confident for expression of emotions, 3.7% of them did not like to reveal their emotions. Only 52.9 % students reported to have good appetite, while only a few (3.7%) the students had poor appetite and others had medium. In all 54.9% students were regular in physical exercise. Regular bowel habits were reported by 83.44% students. However, significantly less number of cases had regular bowel habits and more frequently had constipation

as well as loose motions as compared to non-cases. ($p=0.0008$).

Similarly, though 46 students (10.02%) reported to have excellent efficiency at work, significantly less case reported (3.9%) excellent ($p=0.003$). Percentage of students who claimed to need negligible efforts in routine work showed similar results. Smoking was most common addiction among the 25.5% students who reported to have some addiction. Other common addictions were Alcohol and oral tobacco

consumption. Parameters like Appetite, Regular exercise, believing in God, Meditation, Having a close confident, and addiction did not differ significantly among cases and non-cases.

Students described their emotion for most of the times of the day and most of the days of the week as their mood as per their individual subjective experience as their "mood". They reported various mood states from the options given like happy, sad, anxious, angry, irritable, dull etc.

Table 2. Prevalent mood in cases and non-cases

Mood	Total (%)	NonCases	Cases	Z	P
Happy	184(40.08)	164(42.6)	20(26.3)	2.88	0.00**
Sad	28 (6.1)	21(5.5)	7(9.2)	1.05	0.14
Anxious	80 (17.42)	61(15.9)	19(25)	1.70	0.04*
Fresh	66(14.37)	57(14.9)	9(11.8)	.75	0.23
Satisfied	60 (13.07)	53(13.8)	17(22.4)	1.68	0.05*
Angry	7 (1.5)	7(1.8)	--		
Irritable	6 (1.3)	5(1.3)	1(1.3)	0	
Dull	13 (2.8)	10(2.6)	3(3.9)	0.24	0.40

* indicate result significant at $p < 0.05$

** indicate result significant at $p < 0.01$

The percentage of students experiencing happy mood is significantly less in those who qualified as cases as per SCL-90R. ($p=0.002$) and vice-versa for sad or anxious moods. ($p=0.045$) (Table 2).

Dimensions of psychopathology as indicated by SCL- 90 –R above t 63 cut off

Out of the nine symptoms of psychopathology most common was phobia (32.8%) followed by Obsessive Compulsive symptoms (15.9%). On the other hand

Paranoia was the least prevalent (3.1%) symptom in the total sample. As per SCL-90R 20.5% of males qualified as cases and 8.9% in females were cases which is a statistically significant difference. ($p=0.0002$). Further analysis revealed that symptoms of hostility and paranoia were reported more by males and phobic symptoms by females.

Data were further analyzed to compare prevalence of various dimensions of

symptoms of psychopathology in students from Professional (Medical and

Engineering) and Non-professional courses. (Table 3).

Table 3. Symptoms of psychopathology in professional and non-professional college students

Symptom Dimension on SCL – 90R	Cases among Non Professional (Arts & Commerce) (n =159)	Cases among Professional college students (Medical & Engineering) (n= 286)	Z	P
Somatisation	8(5.03)	32(11.2)	2.42	0.01 *
Obsessive Compulsive Interpersonal Sensitivity	19(11.9)	52(18.2)	1.82	0.03 *
Depression	6(3.8)	26(9.1)	2.36	0.01 *
Anxiety	8(5.0)	33(11.5)	2.57	0.00 *
Hostility	8(5.0)	20(7.0)	0.87	0.19
Phobia	3(1.9)	6(2.1)	0.15	0.43
Paranoia	28(17.6)	118(41.3)	5.80	0.00*
Psychoticism	2(1.3)	12(4.2)	2.05	0.02
GSI	8(5.03)	37(12.9)	3.11	0.00 *
	6(3.8)	22(7.7)	1.87	0.03

* indicate significant at $p < 0.05$

It was observed that phobia, which is the most common psychiatric ailment, was the most prevailing symptom dimension in both professional and non professional students, but significantly more in professional college students. However paranoia was least prevalent in students from non professional course, while hostility was least prevalent in students from professional course. More importantly the table shows that prevalence of all the symptoms except anxiety and hostility were significantly more in professional courses students. Male students from professional colleges had significantly more global severity of symptoms index (GSI) along with Paranoid and Psychoticism dimensions of symptoms. ($p < 0.01$)

Discussion

This study aimed at exploring mental health

and various dimensions of psychopathology among adolescent college students. Prevalence of mental health problems in the study population was 17.07%. These included mainly anxiety spectrum of disorders though all other dimensions of psychopathology were also represented. Up to 20% adolescents do have some psychiatric illness like some anxiety or depressive or adjustment disorder^{3, 8, 17}. In one Indian study, social anxiety disorder using social phobia inventory revealed prevalence of 12.8% equally common in adolescent boys and girls¹⁰. Some of these reported symptoms could be preceding mood disorders as well as psychosis. Alarmingly high prevalence of depressive symptoms (64%) has been reported among Indian medical college students in a recent study using PHQ - 9¹⁸. Anxiety symptoms are known to precede major depression. Psychotic disorders can also be seen as

presenting in a spectrum¹⁹ and patient has a diverse range of symptoms in early stage. Thus these anxiety and depressive symptoms as well as other forms of psychopathology, threshold as well as sub-threshold need to be attended to. Moreover absence of psychiatric illness does not always mean healthy mental state. Mental health is not mere absence of psychiatric illness but also positive psychological attitudes²⁰. It is important to make these students understand the importance of good mental health for succeeding in life.

An Indian review article on non-fatal suicidal behaviors in adolescents concludes that medical professionals and teachers need to be sensitized to identification of these problems and timely referral to mental health professionals²¹. This study also screened adolescents to find high risk group, which can be undertaken for timely intervention. Male undergraduate students were reported to have more suicide risk and females often screen positive for anxiety and Depression as mentioned in a recent review article²².

We have opportunity to reach adolescents in large numbers by approaching these college going students. Improving their mental health by successful use of web based technologies for screening as well as online psychiatric intervention for college students suffering from depressive features has been reported by a recent study²³.

Some simple questions pertaining to mental health were asked in this study. A healthy person can work effortlessly. Reporting of negligible efforts by only 10.4% of the non-cases indicates that even 80% of the non-cases find the daily routine work effortful, which should be noted. The percentage of students experiencing negative moods is significantly more among cases ($p= 0.013$)

(Table 2). Significantly more number of cases had lesser efficiency at work ($p = 0.003$), though some of the cases had good efficiency too. Mental health problems lead to a lot of distress, however work functioning may get affected only in the later stages.

Increasing awareness of students about mental health and related problems is essential in this age. In the Norwegian context where mental health services are relatively available and free of charge, most help seekers achieved contact with health care providers, though half of them at a non-specialized level. Their results suggest that adolescents' recognition of mental health problems or intention to seek help for these, are the major "filters" restricting treatment²⁰. Studies have emphasized that such problems persist into adulthood and may exacerbate unless treated well in time^{5,6}.

All the symptoms of psychopathology were commoner in students from professional colleges (Table 3). This could be attributed to more academic and financial stress and competitive atmosphere, but definitely needs further research. Greater stress in medical and engineering college students has been reported in an Indian study using stress measurement scale¹³. Further research with elaborate methodology may illuminate details of causal association if any. However, results of this study highlight the necessity of looking into mental health needs of these students. Developing a short checklist and screening for these problems as a routine would be useful in primary and secondary prevention. These are intelligent students ambitiously pursuing the professional courses, whose talent and efficiency may be tragically wasted by lack of prompt mental health care.

Limitations

Ideally a two staged study with detailed individual clinical assessment of positively screened students should have been carried out. Though the option of personal consultation was provided to the students, very few turned up for further assessment or treatment.

Conclusion

A significant proportion of students (17.07%) qualified as psychiatric cases as per SCL-90R number of males is much more than females. The number is comparable with other international studies. Students from professional colleges outnumbered students from arts and Commerce College in screening positive for psychopathology. One fourth of the students were abusing some substance or the other. Significantly more students with diagnosable psychopathology had worse mood, less efficiency and more effort required for work along with irregular bowel habits. These simple parameters may be used for identification of mental ill health among these students. Training college teachers and counselors for early identification of these problems or use of web based technology for routine screening of students for mental health problems would be extremely useful.

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