

RESEARCH ARTICLE

Perception of stress in first-year MBBS, BDS, and BPTb students

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ABSTRACT

Background: Stress is a complex dynamic process of interaction between a person and his or her own life. Medical education is perceived as being stressful and characterized by many psychological changes in students. **Aims and Objectives:** To assess stress and explore the differences and correlates of perceived stress among MBBS, BDS, and BPTb first-year students of Dr. D. Y. Patil Medical College, Pimpri, Pune. **Materials and Methods:** A cross-sectional study involving first-year undergraduate students of MBBS, BDS, and BPTb courses. A semi-structured questionnaire developed by Cohen et al. with satisfactory internal consistency and construct validity was used. Unpaired *t*-test and Chi-square test were used for statistical analysis. **Results:** Mean perceived stress scale (PSS) score of female students of MBBS (22 ± 5.96) was higher compared to male students of MBBS (19 ± 6.56) with $P = 0.0009^{**}$. In total, mean PSS score of female students (20.77 ± 6.54) was higher compared to male students (19.07 ± 6.12) with $P = 0.01^{*}$. Percentage of females in the high-stress category was more in medical, dental, and physiotherapy with $\chi^2 = 51.405$ with 6 degrees of freedom, $P = 0.000^{***}$. **Conclusion:** Significant number of the students felt stressful. Females were more stressful when compared to males.

KEY WORDS: Stress; Undergraduate Students; Medical Student; Dental Student

INTRODUCTION

Worldwide, it has been seen that 15-35 years age group is at highest risk for suicide. Worldwide every 40 s, a life is lost through suicide as per the World Health Organization (WHO) data. Suicide is one of the top three causes of death among the young in the age group of 15-35 years. The psychological, social, and financial impact of suicide on the family and the society is immeasurable. Suicide estimates suggest fatalities worldwide could rise to 1.5 million by 2020. Suicide is a

largely preventable public health problem, causing almost half of all violent deaths as well as economic costs in the billions of dollars, according to the WHO. For every suicide death, there are scores of family and friends whose lives are devastated emotionally, socially, and economically. Suicide rates tend to increase with age, but recently, there has been an alarming increase in suicidal behaviors among young people aged between 15 and 25 years worldwide. Under high stress, biological age can be 30 times higher than calendar age. Children laugh about 300 times a day, whereas adults laugh only 15-100 times.^[1]

Depression is the No. 1 occupational disease of the 21st century according to the WHO. Over 50% of the World's children are brought up in stressful conditions, as per the United Nations Educational, Scientific and Cultural Organization. The typical age of onset of social anxiety disorder is 12-19. According to 77% people under stress, anxiety disorders such

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as insomnia and depression hamper their relationships. 58% are embarrassed to acknowledge that they are depressed. India currently has only about 3500 psychiatrists. Analysts reveal that there must be at least a 3-fold increase in strength to help a growing tribe of people suffering from stress-related disorders.^[1]

Globally, 3 out of every 5 visits to the doctor are for stress-related problems. About 85% of people under stress tend to have strained relations with family members and friends. Globally, 1 out of every 10 students suffers significant distress. In India, 72% of students are unaware of how to deal with stress and its ill-effects. In 2006 alone, 5,857 students committed suicide due to exam stress. College is a life-changing experience for any student. College students are at a critical period where they enter adulthood. After completing the study, they need a good job for supporting their family. They are expected to be the elites in the society. Thus, they should enhance their stress management abilities so as to live a healthy life.^[1]

In today's education systems, students are faced with many challenges. College students must realize that college can be demanding because of the amount of homework that is due in a short amount of time, and therefore, it is easy to become overwhelmed. The college has quizzes, tests, papers, examinations, and projects. If time is not managed properly, many students will experience stress. According to Macmillan Social Sciences library research, it was found that 70% of college students say that their grades have a direct effect on their level of stress. A study conducted by Aasra reported that depression among youth has increased from 2% to 12% in the last 5 years.^[1]

Stress is a complex dynamic process of interaction between a person and his or her environment. It is the way one reacts physically, mentally, and emotionally to the various conditions.^[2] Stress that facilitates learning is called "favorable stress," whereas stress that suppresses learning is called "unfavorable stress." An optimal level of stress enhances learning while excess of stress can cause health problems. The stress experienced by students may adversely affect their academic achievements, personal well-being, and long-term professional capabilities. It can lead to mental distress which can have a negative impact on their cognitive functioning and learning.^[2]

Like all young adults, undergraduate students need to cope up with the academic and social demands that they may encounter in university studies in their preparation for professional careers. Therefore, undergraduate education is a sensitive period in an individual's life. The stress in undergraduate students has many sources including academics, personal situations, environment, time management, and economic circumstances. However, students may perceive the same stressors differently depending on cultural backgrounds, personal traits, experience, and coping skills.^[3]

Medical education is perceived as being stressful and characterized by many psychological changes in students. Many studies have observed that medical students experience a high incidence of personal distress during their undergraduate course.^[4-6] Studies have also shown that medical students experience a high level of stress during their undergraduate course.^[7-11] The young student population is vulnerable to stress of higher professional education due to the competitive environment. The review shows that medical student perceives higher stress when compared to non-medical student.^[12] Any level of stress, if left unattended can lead to sleeping disorders, burnout, a dropout, a fact presented by Dyrbye *et al.* in their numerous studies.^[12,13] In India, only a few studies have compared the levels of stress among students from different courses. Therefore, the present study was carried out to determine stress among first-year medical, dental, and physiotherapy students.

Aims and Objectives

1. To assess stress among the first-year undergraduate students of MBBS (Bachelor of Medicine and Bachelor of Surgery), BPT (Bachelor of Physiotherapy), and BDS (Bachelor of Dental Surgery) of Dr. D. Y. Patil medical college.
2. To explore the differences and correlates of perceived stress among the students.

MATERIALS AND METHODS

The Institutional Ethical Committee approval was taken before start of the study. This was a cross-sectional study conducted among undergraduate first-year MBBS, BDS, and BPT students, aged 17-20 years in D. Y. Patil Medical College, Pimpri, Pune, during May 2014 to July 2014. A semi-structured questionnaire was prepared in English. This questionnaire was adopted from Olpin and Hesson stress assessment. This scale was developed by Cohen *et al.* and has been demonstrated to have satisfactory internal consistency and construct validity. The perceived stress scale (PSS) is the most widely used psychological tool for measuring the perception of stress. It is a measure of the degree to which situations in one's life are appraised as stressful.^[14] The questions in the PSS asked about the feelings and thoughts of the students during the past month. This schedule contains 10 items. Among the 10 items, 6 items - 1, 2, 3, 6, 9, and 10 are negatively worded and 4 items - 4, 5, 7, and 8 are positively worded. The negative element was intended to assess the lack of control and the negative affective reactions, whereas the positive element measured the degree of the ability to cope with existing stressors. Each item was rated on a five-point scale from 0 = "never" to 4 = "very often," covering the preceding month. The PSS score was obtained by reversing the responses (0 = 4, 1 = 3, 2 = 2, 3 = 1, and 4 = 0) to the four positively stated items (items 4, 5, 7, and 8), and then,

summing across all the scale items. The score ranged from 0 to 40, with higher score indicating higher levels of stress and the lower scores indicating lower levels of stress.

All students of first-year MBBS (250), BDS (100), and BPT (60) were included in the study. The participants were explained about the study. The participation was voluntary. A written informed consent was obtained. Students were given semi-structured pro forma to cover sociodemographic variables and stress assessment. To maintain reliability, anonymity, and confidentiality, students were asked not to write their names as well as roll numbers. The incomplete questionnaires and those who were not willing for the study were excluded from the study.

Statistical Analysis

Data were analyzed using unpaired *t*-test and Chi-square test with software Primer of Biostatistics.

RESULTS

Only 245 out of 250 MBBS students, 87 out of 100 BDS students and 57 out of 60 BPT students could complete the questionnaire and were included in the study. Mean PSS score was almost same in medical, dental, and physiotherapy students as seen in Table 1. On gender-wise distribution, female students of MBBS showed higher PSS score compared to male students of MBBS which was statistically significant on applying unpaired *t*-test as seen in Table 2. In total, with sample size of 389 of all courses, female students showed a higher PSS score compared to male students, which was statistically significant as seen in Table 3.

PSS score of 20 or higher was considered as high stress. Hence, on segregating the students under low stress and high-stress category, the percentage of female students in high-stress category was more, which was highly significant on applying Chi-square test as shown in Table 4.

On considering males and females together, total percentage of high stress in all courses was above 50% as seen in Table 5.

DISCUSSION

The main purpose of this study was to examine the stress level of MBBS, BDS, and BPT first-year undergraduate students of the same university. The findings of the present study showed that stress was higher in females compared to males. The mean PSS score of females in total was more which was statistically significant. In MBBS students, PSS score of females was higher compared to males, which was highly significant. In BDS and BPT also, females scored more compared to males, but statistically, it was not significant.

Table 1: Mean PSS score in all courses

Course	N	Males	Females	Mean±SD	
				Age	PSS
MBBS	245	118	127	18.64±1.13	20.58±6.37
BDS	87	14	73	18.56±0.67	19.28±5.73
BPT	57	8	49	18.33±1.27	20.75±7.22

SD: Standard deviation, PSS: Perceived stress scale

Table 2: Mean PSS score of male and female students of all courses

Course	Gender	N	PSS (mean±SD)	P
MBBS	Male	118	19±6.56	0.0009**
	Female	127	22±5.96	
BDS	Male	14	19.71±4.66	0.36
	Female	73	19.21±5.86	
BPT	Male	08	18.5±7.14	0.19
	Female	49	21.12±7.8	

Results are expressed as mean±SEM for normally distributed variables or as median and interquartile range when data were not normally distributed. Difference between groups was tested by Student's *t*-test, Mann-Whitney test, or Chi-square as appropriate. ***P*<0.001, PSS: Perceived stress scale, SD: Standard deviation, SEM: Standard mean error

Table 3: PSS score of male and female students together

Total	N	PSS (mean±SD)	P
Males	140	19.07±6.12	0.01*
Females	249	20.77±6.54	

Results are expressed as mean±SEM for normally distributed variables or as median and interquartile range when data were not normally distributed. Difference between groups was tested by Student's *t*-test, Mann-Whitney test, or Chi-square as appropriate. **P*<0.05, PSS: Perceived stress scale, SD: Standard deviation, SEM: Standard mean error

In Indian society, females had more expectations than males with social customs and restrictions. They had less freedom and choice in comparison to boys. The girls usually are busy throughout the day due to hectic lifestyle. Research conducted by Steenbarger et al. and Ronald also reported that girls have a higher level of stress than their male colleagues.^[15,16] Stress from high expectations from teachers, parents, and themselves is usually an agony for students studying in schools.^[17] Supe reported that there is considerable amount of stress in medical college students.^[5] The young student population has always been vulnerable to stressful life conditions especially in pursuit of higher professional education in a highly competitive environment.^[18,19]

The female students perceive more stress. They not only differ in their perception of stressors as they perceive more pressures over themselves, but their reactions to stressors are also different. They seem to be more overtly reactive. They

Table 4: Percentage of high stress and low stress in male and female students

Course	Low stress		High stress		Chi-square
	Males (%)	Females (%)	Males (%)	Females (%)	
MBBS	69 (28.16)	44 (17.95)	49 (20)	83 (33.87)	51.405 with 6 degrees of freedom; $P=0.000^{***}$
BDS	5 (5.74)	36 (41.37)	7 (8.04)	39 (44.82)	
BPTh	6 (10.57)	20 (35.08)	2 (3.5)	29 (50.87)	

Results are expressed as mean $\pm$ SEM for normally distributed variables or as median and interquartile range when data were not normally distributed. Difference between groups was tested by Student's *t*-test, Mann–Whitney test, or Chi-square as appropriate. $^{***}P<0.0001$, SEM: Standard mean error

Table 5: Percentage of high stress and low stress together

Course	Low stress total (%)	High stress total (%)	Chi-square (χ^2)
MBBS	113 (46.12)	132 (53.87)	0.038 with 2 degrees of freedom, $P=0.981$
BDS	41 (47.12)	46 (52.87)	
BPTh	26 (45.61)	31 (54.39)	

Results are expressed as mean $\pm$ SEM for normally distributed variables or as median and interquartile range when data were not normally distributed. Difference between groups was tested by Student's *t*-test, Mann–Whitney test, or Chi-square as appropriate. $^{***}P<0.0001$, SEM: Standard mean error

demonstrate more physiological and emotional responses than male students. These gender differences in perception of stressors and their reactions might be interpreted as evidence for the role of gender in the socialization of emotions. Usually, in our culture, males are expected to suppress their emotions. Hence, lower psychological and emotional reactions to stressors for male students may result from their socialization, which teaches them that emotional expression is an acceptance of weakness and does not fit into the construct of masculinity. The other possible reason could be that females are more emotionally responsive and have tendency to over report their medical and psychological symptoms.

MBBS students had more pressure due to their academic and large amount of syllabus content in a small amount of time. Anxiety, academic alienation, and future academic prospects taken together also added to the difficulties experienced by MBBS students. The first-year MBBS had no exposure to patients and clinics as compared to the first year of BDS and BPTh students. Hence, it was purely theoretical which might be the reason for stress because most of the things these students had to imagine and study which becomes difficult for many students and creates stress. Another reason may be that MBBS students literally got no opportunity to participate in physical or recreational activities. Most college students usually feel overwhelmed because they are not managing their time correctly and are doing everything at the last minute. If a college student has excellent time management and is responsible to make correct decisions, then college will be less challenging and will promote good stress in their lives. The findings of this study were similar to the study

conducted by Pines et al., who cited women's sensitivity to the school aspects of life and work as the reason why women considered people a greater source of stress in their work than men did.^[20]

The overall percentage of females in high-stress category was 50.87, 44.82, and 33.87 in BPTh, BDS, and MBBS students, respectively, which was highly significant. Items 1, 9, and 10 of MBBS students scored more compared to BDS students with *p* value of 0.007, 0.01, and 0.01, respectively, which was statistically significant. Items 1 and 10 of BPTh students scored more compared to BDS students with *P* value of 0.01 for both the items which were statistically significant. Items 1, 9, and 10 are negative elements showing the lack of control and the negative affective reactions. The above result showed that lack of control and negative affective reactions are more in MBBS and BPTh students compared to BDS students. Pinel defines stress as a physiological response to perceived threat.^[21] It, therefore, has negative effects on life's pressures and events^[22] and can generally be viewed as a set of neurological and physiological reactions that serve an adaptive function.^[23] Any change in life that requires numerous readjustments can be perceived as stressful.^[24]

Adolescents are receiving education in junior high schools, senior high schools, vocational high schools, colleges, or universities. Due to fast physical changes and mental development at this stage, students may sometimes experience incompatibility of their mental development with their physical changes or with the social environment and thus suffer from problems arising due to inadequate adaptations. These problems may further cause psychological troubles and even induce deviant behaviors. In modern society, stress has become a part and parcel of life. Teenagers of today face many challenges that parents and traditional educators may not have had to experience when they were growing up. Due to numerous pressures of the 21st century, adolescents are having difficulty in coping and are requesting for educational programs in schools to help teach them how to cope with such stressors.^[25] Many students face stress as they try to mix up busy school and work lives while they are trying also to have time with family and friends. For some students, stress becomes almost a way of living. However, it is really dangerous to let stress become student's way of living in

college because high-stress levels can lead to a terrible effect that changes completely their life and it may result in failure. When the brain perceives stress, a physical reaction is triggered, and it easily damages the memory, which may lead to further misreactions and misconduct. A student's life is subjected to different kinds of stressors, such as the pressure of academics with an obligation of success, uncertain future and difficulties envisaged for integration into the college system. These students face social, emotional, physical, and family problems which may affect their learning ability and academic performance.^[26,27] Stress levels among college students are higher than those of people at any other stage of life, a poll has found. In addition, the poll found that college students have a higher predisposition toward experiencing depression.^[28]

Coping strategies are known to influence an individuals' experience of stress. For most students, managing stress during college can be extremely challenging. However, learning how to manage stress may help students cope with everyday social and academic pressures, and thus have a better college experience. Effective time management strategies increase academic performance^[29] and are frequently suggested by academic assistance personnel as aids to enhance achievement for college students. Although programs emphasize starting large tasks well before due dates, breaking down large tasks into small ones, and doing small tasks on a regular schedule, students regularly ignore these techniques and find themselves in great distress before exams.^[30] The variety of the learned component stress management techniques can find expression in the social learning theories which include behavior modification, biofeedback, cognitive restructuring, and even relaxation techniques such as meditation. The concept of coping is based on three theoretical components, namely, physiological, cognitive, and learning. Physiologically, the body's systems have their own ways of coping with distressing events. Threats or challenges that an individual perceives in the environment can cause a chain of emotional arousal and neuroendocrine events that involve the secretion of catecholamines (epinephrine, norepinephrine) and corticosteroids.^[31] Studies from the United Kingdom have revealed that medical students with the stress of undergraduate education have generally used alcohol as a coping strategy.^[32,33] There are also studies that have revealed the use of alarming substances such as tobacco and drugs as coping strategies.^[34,35] A study from Pakistan reported that sports, music, and hanging out with friends were common coping strategies.^[36] Usually, in the first year or first semester of study, stress and psychological problems are more perceived and reported.^[5,36] This might be due to the stress of new environment. Being able to manage responsibilities, problems, or difficulties in a calm and thoughtful manner is one way of coping. Students are being pressurized frequently by a variety of factors which cause them to have stress in one or more ways.^[37]

CONCLUSION

This study concludes that stress was perceived by the majority of the first-year students belonging to MBBS, BDS, and BPTd courses. It was also found that the female students felt more stressful when compared to their male counterparts. All these students belong to the same university and had nearly similar resources and environmental exposure. Further studies can be done by enrolling a larger number of students from different courses with various stressors and coping strategies.

Students represent the vital part of our young population. It is terrible to know that health problems of the young population are not being addressed adequately and effectively. As a health-care professional, it is our responsibility to monitor the prevalence of stress among students and provide professional help for them to cope with these stressors. Proper guidance, advisory services, counseling, support groups, review of academics, and exam schedules, regular sessions on time management and stress management by experts, healthy leisure activities, regular extra or co-curricular activities, and better interaction with the faculty at the campus can do a lot to reduce the stress.

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