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Prevalence and Causes of Stress in Newly Joined Medical and Dental Students Varies with Gender

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ABSTRACT

BACKGROUND: Acute stress is positive and enables a person to perform better but the chronic form is the silent killer. No one is shielded from stress but the stress in medical and dental students has increased by leaps and bounds, and the factors for it are different at different stages of this profession **AIM AND OBJECTIVES:** To determine the prevalence and causes of stress in newly joined medical and dental students and their gender variations .**MATERIAL AND METHOD:** Cohen's perceived stress test to assess the prevalence of stress was used and the self-drafted questionnaire to assess the factors of stress was filled. **RESULTS:** 92.8 % of students were under moderate or high stress, and it is observed that Psychosocial stressors were the major cause compared to academic and health stressors and it was observed that the female students were affected significantly and the *P* value was < 0.01. **CONCLUSION:** Interventions like counseling, yoga and meditation can be included to reduce the deleterious effect of stress and these can be gender based.

Keywords: *newly joined medical students; psychosocial stress; gender.*

INTRODUCTION

One of the common causes of stress in young adult is joining of a graduation course, which is a major change in personal as well as professional life of an individual and it brings along with it multitude of variance in one's lifeline like : migration, separation from comforts of family, increased personal responsibilities, academic and peer pressure and not to forget the unfairness of life. With recent advances in medical science the first year students have to master a lot of knowledge in a short span of time and all these together, leads to stress in the life of newly joined medical and dental students.

Walter B.Cannon coined the term homeostasis to describe the steady state of internal environment of the body, the physiological equilibrium. In contrast to this Mc.Ewen used the term allostasis, referring to body's ability to adapt to changing environment and set a new equilibrium, which is beneficial for survival. During stress a person initially adapts to change which can be called allostasis but with time if stress persists it becomes allostatic load and further allostatic overload , which is exaggerated physiological or pathological response. This stress is responded physiologically in our body by hormonal and in-turn behavioural changes. Stress for a short while enhances our performance but once it is prolonged it leads to decrease in the resources to cope, leading to a response by the body in the form of anxiety, immunosupression, eating disorders, hormonal imbalance like decreased dopamine and endorphins causing decreased threshold to pain, decreased cognition and reduced pleasure in previously enjoyed activities.

Stress in psychology is defined as a feeling of strain and pressure. Stress response to occur in humans, we must first have interpreted a situation as being either novel, unpredictable, as one that threatens our ego or sense of self or decreases our sense of control. These stressors are perceived differently by a XX and a XY chromosomal carrier and their responses also varies to a major extent. The physiological variations of hormones in male and females naturally influences and explains the differences in their behavior. The interaction of sex

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hormones with stress hormones produces differences in the perception of stress. A man having a SRY gene has more of norepinephrine while a woman who has estrogen which produces more of endorphins in response to stress, so the stress is perceived differently.

Previous studies in undergraduates have shown that academic performances are the greater stressors, more so in the female students.[1] But in our study we pinpoint the determinants of stress in the early 1 month of joining the graduation course where the causes are more psychosocial as compared to the academic and health stressors of later half of the course .

As they enter an unexplored, unknown and less predictable way of life which brings along with it hidden stressors, it would be wise to detect, create awareness and device steps to address them so that it would not hinder their future performance in academic, social and psychological arenas of life. As they have a long way to go in the choosen profession and face the realities and consequences of their "choice" there is a need to know the different factors causing agony in their young minds so as the institution as well as the parents can support them effectively.

MATERIALS AND METHOD

The study was conducted on a total of randomly selected 200 newly joined medical and dental students in the month of August- September 2017 at Dr. B.R.Ambedkar Medical college , a prestigious private medical college situated at Bangalore, Karnataka. Complete anonymity was maintained while administering the questionnaire.

INCLUSION CRITERIA

A group of apparently healthy students in the age group of 19-20 years who have recently joined their graduation course were included.

EXCLUSION CRITERIA

The students having a major physical or mental health problems like epilepsy, asthma, students who were differently abled, or ones on any continued medication or who had suffered a recent demise of a family member were excluded from the study.

No student had exam in the following 3 months.

Informed explained consent was taken before conducting the study. The students were asked to fill the questionnaire quickly so as prevent subject bias.

Subjects Personal data was taken and they were asked to fill 2 sets of questionnaire:

Firstly, To assess the stress levels :- By Cohen's Perceived Stress Test, which is the standard internationally accepted stress scale.

Students who had average stress were not included for the further analysis as it is a physiological condition.

Secondly, To know the stress inducing factors a carefully drafted 30 items pre-structured and pretested questionnaire was prepared, in which the common stressors were divided into 3 groups as a) academics b) psychosocial and c) health aspects of life . Academic factors like vastness of course, language barrier, assignment burden, peer pressure were included. Health factors major concerns were quality of food and hygiene, change of weather, physical tiredness, sleep difficulties. While psychosocial issues were difficulty in finding friends, social media botherance, self presentation, financial constraints and time management. Each question was scaled as 0(never), 1(rarely), 2(sometimes), 3(frequently), 4(always).

After data collection, Mean and Standard Deviation for different stress factors was achieved and gender variation was compared using student t' test.

FINDINGS

Out of 200 newly joined students, 180 participated in the study in which 58 were males and 122 were females.

Table 1: Cohen's Perceived Stress test

Sample size (n)	Average stress	Moderate Stress	High Stress
180 (100%)	13 (7.2%)	60 (33.3%)	107 (59.5%)

From the results obtained by Cohen's Perceived Stress test (table 1) the distribution of stress levels among students was 7.2% average stress, 33.3% moderately stressed and 59.5% highly stressed.

Table 2: Gender wise distribution of stress

Gender (180)	**Average stressed (13)**	**Moderately Stressed (60)**	**High Stress (107)**
Male (58)	05 (8.6%)	21 (36.2%)	32 (55.2%)
Female (122)	08 (6.5%)	39 (32.0%)	75 (61.5%)

From table 2 the prevalence of moderate and high stress levels is 93% in females and 91.4% in males.

Observation from Second Set of Questionnaire for **stress factors** in moderately and highly stressed students was as follows :-

Table 3: Major causes of stress

Sl.No	**Subgroups of Stress Factors**	**Mean Scores(n=167) (Mean ± SD)**
1	Academic	12.91 ± 0.81
2	Psychosocial	15.68 ± 0.67*
3	Health	10.41 ± 0.49

*Psychosocial factors shows highest mean value.

Table 4: Comparison of major causes for stress among gender

Subgroups of Stress Factors	**Male(n=53) (Mean ± SD)**	**Female(n=114) (Mean ± SD)**	***P*-Value**
Academic	12.84 ± 0.79	12.94 ± 0.81	0.916
Psychosocial	15.18 ± 0.39	15.91 ± 0.65	0.009*
Health	10.43 ± 0.50	10.40 ± 0.49	0.495

*$P < 0.01$, Highly Significant

STATISTICAL ANALYSIS

Statistical analysis was done using SPSS software and paired t' test results revealed that the psychosocial stress had highest mean value (15.68 ± 0.67).

paired t' test for gender variation of psychosocial stress factor showed $p < 0.01$.

RESULTS

92.8 % of students were under stress, and it is observed that Psychosocial stressors were the major cause compared to academic and health stressors.

Compared to males, female students were affected significantly and the p-value was < 0.01 which is highly significant.

DISCUSSION

In our study we are trying to assess the prevalence of stress in newly joined medical and dental students and we observed that 92.8% students were moderately or highly stressed. Out of the totally stressed students 7.2% were average , 33.3% were moderately , and 59.4% were highly stressed. The psychosocial factors of stress (mean=15.68±0.67) was found to be dominant over the academic and health causes. Our study also highlighted that psychosocial stress affected female

students significantly compared to males. The common psychosocial factors were, loneliness and difficulty in planning work schedules. Our study results coincides with a similar study conducted by Hamza M. Abdulghani et al. on medical students which concluded that the level of psychosocial stress was higher in female students as compared to males, they have also concluded that newly joined students are under higher stress.[2] In another study conducted by A.N. Supe on medical students at Mumbai has concluded that stress in medical students is common and is process oriented , he found emotional factors are greater perceived cause of stress in 1st MBBS and stress depends on personal way of coping strategy and social support.[3]

Stress and health care personnel's is synonymous, but now it has to be acknowledged and reduced because the mental health of these budding doctors will reflect heavily on their future patient care. The mean was highest for psychosocial stressors. Psychosocial factors of stress dominated in the initial few days because 1)Lack of previous experience of self management regarding time and money 2) Indian system promotes spoon feeding, cocooning and inhibits and binds us from independent decision making 3) According to Eric Erikson's stages of psychosocial development, psychosocial crisis like identity, intimacy and isolation surfaces in young adults which has to be taken care of [4] 4) Academic factors starts contributing later .

Many studies have been done to assess the factors causing stress in medical students , and have concluded that the academic factors are the main determinants of stress but our study concluded that the psychosocial factors are the most important ones in the freshly joined students but academic factors are the determinants for the later-half of the profession which is highlighted by Anandhalakshmi Swaminathan et al. who conducted the study after 6 months of joining the course and concluded that the vast majority of students perceived moderate stress and analysis highlighted a greater association with academic factors compounded by psychosocial ones.[5] Again a study done by Ranadip Chowdhury concluded that the determinants of stress in undergraduates is mainly academic like vastness of syllabus, performance in practicals, clinical postings etc.[6] Another study by Sahana Madhyastha et al. has concluded that academic performance and professional identity issues were of greatest concerns in third year medical students.[7]

We also found that prevalence of stress was higher in females (93%) as compared to males (91.4%) which is in consistent with the results obtained by Hamza M Abdulghani et al. as well as study done by M. Pilar Matud who suggested that women suffer more stress than men.[2,8] Female sex hormone attenuates sympathoadrenal and HPA response so there is sluggish cortisol feedback on brain leading to reduced containment of stress response and they feel more psychologically affected. Also, this difference in perceiving and processing of the same stressors can be explained because of the differences in the development of male and female from the fetal life ie; male brain is exposed to testosterone and estrogen produced by the testis, which will facilitate and suppress the brain cell production in different areas, whereas the female brain is not exposed to estrogen as the fetal ovaries do not produce any hormones and so the reverse happens during development of brain.[9] Subsequently, after birth the psychological development of a male and a female differ because of society and gender roles.

Added to the initial psychological stress , the students will be exposed to multiple stressors like academic , health and physical which will lead to chronic stress acting as an allostatic load, which in-turn will lead to increased cortisol , increased sympathetic activity etc. on the body, which has multiple adverse effects like reduced cognition , altered metabolism , cardiovascular morbidity, supressed immunity and altered A.N.S function .This manifests as decrease in performance, development of habits (addictions), obesity, anxiety (depression) and vulnerability to ill-health. Eunice .Y .Yuen et al. has concluded that repeated stress causes cognitive impairment by suppressing glutamate (major excitatory neurotransmitter) receptors expression and function in prefrontal cortex.[10]

In a study by Ajay T Shendarkar and Vijay Patil has suggested that child rearing was found to be playing an important role in dealing stressors and family support can be an effective tool for helping medical students.[11]

Because of such varied ramifications, stress has to be nipped in the initial stages by various interventions designed for males and females separately by the institution, authority and mentors by active participation and discussion. Helping women to achieve a greater sense of control over their circumstances would definitely enhance their performance.

CONCLUSION

In our study we found that 92.8% of newly joined medical students were under stress and higher percentage of female students were affected. The major cause of stress was psychosocial stress . We have to acknowledge that stress exists in all fields and to ensure that students are aware of initial symptoms of stress and also of the assistance programs like meditation, yoga, counseling , sports and exercise that are available to them .

Conflict of Interest: Nil

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Ethical Clearance – Ethical clearance was obtained from the Institution Ethics Committee of Dr. B. R. Ambedkar Medical College and Hospital.

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