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Original Research Article

Prevalence of Prehypertension and its Association with the Perceived Stress among Health Professional's Students: A Cross-Sectional Study

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Abstract

Background: Stress is a negative emotional, cognitive, behavioral and physiological process occurs as individual adjusts with stressors. Due to the secretion of this cortisol and epinephrine blood vessels are tightenedas a result heart rate and blood pressure increases. Present study aimed to asses the level of perceived stress and its association with Pre hypertension in health professional beginners. ***Material and Methods:*** A cross sectional study was conducted in the Department of Biochemistry, SBKS MI & RC, SVDU for consecutive two batches 2016-17 & 2017-18. Total 506 first year MBBS, BDS & BPT students were studied for age, gender and Blood Pressure. Stress was assessed by PSS-10 scale. Two groups were identified as their PSS score, stressed and non-stressed. ***Results:*** PSS score showed that among all participants 71.74% (N=363) students were stressed and 28.26% (N=143) students were none stressed. In the present study the mean systolic blood pressure and diastolic blood pressure of 506 health professionals was 125.63±3.35 and 76.96±5.65 respectively which falls under the category of pre hypertension. ***Conclusion:*** Majority of students could be categorized as pre-hypertensive group based on blood pressure.An effective inclusion and implementation of regular exercise, sports and cultural activities and stress management program like meditation, yoga in the medical curriculum may be a key to reducing and or preventing stress-induced psychological distress and Hyperteinsion

Key word: Perceived stress scale, Hypertension.

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INTRODUCTION

The word 'stress' is used in everyday life and every profession and field. Generally it talked about in non-specific way to refer broadly to the process of coping with various pressures and problems of life and talked in a loose way, mostly negatively. When we look at more precise definition of stress, in the Concise Oxford Dictionary, stress is defined as a 'demand on energy'. Many researchers defined stress in different perspectives some have stated it as negative emotional, cognitive, behavioural and physiological process occurs as individual adjusts or deals with stressors[1]. An individual can encounter various types of stresses. In student's life, academic stress is most prevalent [1, 2].

Students who successfully enter choice of their professional course such as medical education will be encountered with monumental tasks of completing the path in a productive way. When students enter medical college/university campus they come with high enthusiasm and dreams but as time goes on a number of students lose their way and come under stress and decrease in motivational levels. These factors affect their academic performance. Students who were toppers during the schooling days not able to keep up that status in the initial years of professional course due to various academic and non-academic reasons. This is one of the few medical campuses which are different from other campuses of medical colleges in Gujarat. This college is integral part of a deemed university and the academic atmosphere is different from other private and government medical colleges which are not deemed in nature. In this campus, students from many streams other than medical dental physiotherapy carry out their studies. The first aspect of this study is to assess stress levels using standardized stress scales.

Some of the vital parameters like blood pressure are affected by the effect of stress, due to increase in sympathetic activity [3, 4] which leads to increase in the secretion of epinephrine (Adrenalin) and cortisol hormones. Due to the secretion of this cortisol and epinephrine hormone, blood vessels are tightened

and the activity of the nervous system gets affected, as a result heart rate and blood pressure occurs [5, 6].

MATERIAL AND METHODS

Cross sectional study was conducted in Department of Biochemistry, SBKS MIRC after Ethical clearance (SVIEC/ON/MED/PHD/16086).Total 506 health professionals beginers, who volunteered and gave consent, were recruited. Study was conducted for consecutive two years (2016-17 & 2017-18 batchs) of first year students of MBBS, BDS & BPT. All the students were explained the ojectives of present study in detail. Students of any kind of self reported psychological disorders considered as excluded.

It was measured according to the standardised protocol recommended by The British hypertension society in a relaxed seated position, without moving and talking for a minimum period of 5 minutes with sphygmomanometer. The "2017 High Blood Pressure Clinical Practice Guideline" drawn up by American College of Cardiology and American Heart Association in the United States has set a new goal in treatment of high blood pressure (BP) and recommended that "BP should be categorized as normal, elevated, or stage 1 or 2 hypertension to prevent and treat high BP." This set of new high BP guidelines has lowered definition of hypertension by defining normal as <120/80 mm Hg; elevated BP as systolic 120 to 129 mm Hg and diastolic <80 mm Hg; and stage 1 hypertension as systolic 130 to 139 mm Hg or diastolic 80 to 89 mm Hg[7].

Table-1: Global measure of perceived stress scale (PSS-10) [15]

Questions
In the past month, how often have you been upset because of something that happened unexpectedly?
In the past month, how often have you felt unable to control the important things in your life?
In the past month, how often have you felt nervous or stressed?
In the past month, how often have you felt confident about your ability to handle personal problems?
In the past month, how often have you felt that things were going your way?
In the past month, how often have you found that you could not cope with all the things you had to do?
In the past month, how often have you been able to control irritations in your life?
In the past month, how often have you felt that you were on top of things?
In the past month, how often have you been angry because of things that happened that were outside of your control?
In the past month, how often have you felt that difficulties were piling up so high that you could not overcome them?

Prceived stress scoring

Reverse your scores for questions 4, 5, 7, and 8.
On these 4 questions, change the scores like this: 0 = 4, 1 = 3, 2 = 2, 3 = 1, 4 = 0.
Now add up your scores for each item to get a total.
Individual scores on the PSS can range from 0 to 40 with higher scores indicating higher perceived stress. Scores less than 13 would be considered nonstressed. Scores more than 13 would be considered as stressed

RESULTS

On the basis of final PSS score the whole group was dividid in two groups. PSS > 13 considered as stressed group (N=363) with mean PSS score 22.32±4.32. PSS <13 considered as none stressed (N=143) with mean PSS score 10.96±1.69. PSS score is significantly high in stressed group as compared with non stressed group.

Table-2: Comparison of Mean and Standard Deviation of Systolic Arterial Blood Pressure and Diastolic Arterial Blood Pressure

Blood Pressure(mmHg)	Stressed 363		Non Stressed 143		p value
	Mean	SD	Mean	SD	
SBP	127.28	7.85	124.35	6.49	0.0001
DBP	78.96	6.58	75.32	4.37	0.0001

DISCUSSION

In the present study the mean systolic blood pressure and diastolic blood pressure of 506 health professionals was 125.63±3.35 and 76.96±5.65 respectively which falls under the category of pre hypertension. Our results are similar to those reported by other workers (Choxi *et al*. [8] Hildrum B [9] and Johannessen L *et al*. [10]. In the present study we have compared mean Systolic Blood Pressure, Diastolic Blood Pressure values with PSS and it was significantly higher in stressed group as compared to non stressed group (127.28±7.85 vs. 124.35±6.49 (<0.0001), 78.96±6.58 vs. 75.32±4.37 (<0.0001), respectively which is somewhat similar to two other studies [11-12]. On the contrary, other researchers (Khaliq F *et al*. and Light KC,Mcewen BS) showed that stress has inverse relation with BP [13, 14].

Stress can cause hypertension through repeated blood pressure elevations as well as by stimulation of the nervous system to produce large amounts of vasoconstricting agents like catecholamines, leading to

an increase in heart rate, cardiac output, and blood pressure. Prehypertension is an early pointer to hypertension. Pre-hypertension has a multifactorial etiology, where genetic, as well as psychosocial and environmental factors, contribute to its development which further progresses to hypertension. It is highly likely that there is an association of prehypertension with stress and anxiety. It is a well-known fact that stress is one of the contributors to hypertension by recurrent blood pressure fluctuations. Factors influencing blood pressure through stress include white coat hypertension, nature of job, race, environmental factors, and emotional status.

In the present study, based on the scores obtained, the participants of the present study were divided into 'stressed' and 'none stressed 'groups. It was observed that 71.74% students were stressed and the remaining 28.26% students were non-stressed. PSS-10 has been widely being used by many research workers as an instrument to assess the stress among health professionals. The advantages of PSS-10 are that it is brief, easy to apply and has been documented for its reliability and validity [15]. Studies have also been conducted on stress in education throughout the world, under different settings and different instruments were used for assessing the stress levels of health professional students [15]. Globally many researchers have reported similar outcome of PSS-10 score within variation of ± 10% as compared to the scores obtained in the present study. From the different region of India similar prevalence values (73.5%) were reported by other workers [16]. Two Studies were conducted from Saudi Arabia using PSS-10 reported different prevalence percentage of 77.2% and 71.9% [17, 18]. Competitive enviorment with long working hours due to huge burden of curriculum framed by the council; frequent assessment and limited time for revision leads to fear of failure and high perceived stress.

While the studies in other countries found the lower PSS score reported in India, Malasia [19, 20]. On the contrary a study done in Iran stated that 83% students had perceived stress [21]. The possible explanation for this difference may be setup difference, technological difference, and curricular approach.

CONCLUSION

Majority of students who enter professional courses had high levels of perceived and academic stress and reasons for these high levels were mostly fear of failure in examinations and sharing the poor performance with parents. Differences in blood pressure such as systolic and diastolic blood pressure were statistically significant between stressed and non-stressed students. (<0.0001) Majority of students could be categorized as pre-hypertensive group based on blood pressure. An effective inclusion and implementation of regular exercise, sports and cultural activities and stress management program like meditation, yoga in the medical curriculum may be a key to reducing and or preventing stress-induced psychological distress and Hyperteinsion

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