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Stress And Stressors

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PERCEPTION OF "STRESS" AND "STRESSORS" AMONG FIRST YEAR MEDICAL STUDENTS AND EFFECT OF INTERVENTION ON THEIR STRESS PERCEPTION

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ABSTRACT

Objective: To explore perception of stress & stressors among first year medical students, with or without intervention.

Study Design: Quasi-experimental study.

Place and Duration of Study: Shaheed Mohtarma Benazir Bhutto Medical University (SMBBMU), Larkana and duration of the study was of eight months starting from Oct 2017.

Methodology: All the first year medical students who were willing to participate and present in class and filled the post it notes and perceived stress scale-questionnaire completely were included in this study. These 240 students were randomly divided to two equal groups of 120 students in each; group I received intervention and thus labeled as intervention group, whereas group 2 included remaining half of students which did not receive any intervention (non-intervention group). The intervention was in form of a 2 days' workshop on stress management. The contents of workshop were carefully selected in concordance with the identified stressors from response of students on the post-it-notes.

Results: About 45% (109) were boys and 55% (131) were girls. Most common stressors identified were, time management (24.1%), lack of guidance from teacher regarding test/exam preparation (20.8%), failure to memorize and retain learned facts (19.1%), lack of peer support (12.5%), frequent test/exams (10.8%) long courses (8.3%) and conflict with teachers/friends (4.1%). Mean baseline perceived stress scale score in intervention group was 19.72 ± 6.04 where as in non-intervention group it was 19.27 ± 0.583. The difference of PSS scores before (baseline) and after intervention (delayed) was statistically significant (p-value <0.001) between two groups.

Conclusion: We may conclude from our study findings that the moderate degree of stress is not uncommon among first year medical students and the stress-management intervention improves perception of stress by addressing the common stressors as identified by them.

Keywords: Medical students, Perceived stress scale, Stress, Stressors, Time management.

INTRODUCTION

Perception of stress varies among individuals even under same situation on account of distinctive views about stress & coping strategies. This is especially true of medical students sharing diverse cultural, socioeconomic & educational background[1-3]. The recent published reports and results from both developing & developed nations have documented burn out syndrome (BOS) in nearly 50% of the medical students signifying global increase in stress[4,5]. The exposure to new learning environment, challenges of adapting to new responsibilities & educational curriculum, periodic examinations, sleep deprivation & lack of facilities & social support are some of stressors in medical education. In-attention to these stressors, especially during critically important formative first & second years may result in serious behaviors such as indulgence in drinking & drug abuse or even suicidal tendencies, depression & impaired classroom performance[6]. Various studies in literature have reported effectiveness of stress management programs in increasing personal awareness & knowledge concerning their stress & coping abilities to range of stressors, however there is no consensus on agreed approaches to teaching stress management despite its proven significance[7].

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No "gold standard" exists for the content of stress-reduction programs for medical trainees. The literature has revealed that a wide variety of interventions may be included under the umbrella of stress reduction; e.g. directed and non-directed support groups, relaxation training (including meditation and hypnosis), time-management and coping skills, mindfulness-based stress reduction, and mentoring programs[10]. In this regard, some studies show that interventions framed on "DEAL model" have promising results[6-8].

This interventional study was carried out with intention to investigate perception of first year medical students of Chandka Medical College Larkana about stress, so as to identify trends of various controllable educational/institutional stressors and to determine if stress management interventions bring any change in their perception.

Our study has been purposefully based on first year medical students since this academic year is the most vulnerable period during which students have to face multiple sources of stress including new responsibilities and new environment. Also there is relative paucity of local research in this area and traditional curriculum design and contents itself acts as important source of stress. Thus current institutional teaching trends completely overlook the impact of resulting stress on personal, academic and social life of students[9-10].

Based on the results, this study will provide platform for institutional reforms to be made in current teaching by incorporating various stress management workshops in curriculum on regular basis.

METHODOLOGY

We opted quasi-experimental study design for the present study. We used *post-it notes* to get response of students towards a question about what are educational stressors as perceived by them & *perceived stress scale (PSS)* to measure baseline and delayed stress scores before and after intervention. Non-probability consecutive sampling was utilized initially for inclusion in the study and later randomization by lottery method was used to divide the participants in 2 groups.

Sample size of 228 cases was calculated with 95% confidence interval, 6.5% margin of error and taking expected percentage of burn out syndrome i.e. 50%. But we took sample size of 250 first year students with 10% chance of lost to follow up or missing data.

Out of 250, 3 were rejected as their proformas were incompletely filled, 7 were not present in the class on informed date. Hence a total of 240 students who were willing and filled the post-it notes and PSS questionnaire completely were included in study. Out of 240, 120 students including boys and girls were randomly selected so that 120 students received intervention and remaining half of students (120) acted as control. The venue of the study was Shaheed Mohtarma Benazir Bhutto Medical University (SMBBMU), Larkana and duration of the study was of eight months starting from Oct 2017. The study excluded the students found absent on informed dates for participation or unwilling, whereas all the first year medical students who were willing to participate and present in class and filled perceived stress scale (PSS)-questionnaire completely were included in this study. We used validated PSS as it specifies to measurement of "stress" without taking in account the other related variables such as depression and anxiety, thus it helps in focusing the research question. Moreover, the questions of PSS were simple and self-explanatory so that students can mark their responses correctly on the 5-point Likert scale. Calculation of pre and post-intervention (Baseline and delayed) PSS mean scores and comparison of these scores for two groups on this scale was also relatively easy and was done. The ethical approval was taken from the institutional ethical Committee and additionally an informed consent was also taken from all the study participants before commencement of this research.

Intervention was in the form of 2 days' workshop on stress management. The identified stressors were used to design contents of stress management workshop i.e. we taught them how to resolve conflicts, how to manage time and set priorities, study skills tips about how to approach examination/test and increase memorization such as; organizing contents, highlighting and focusing core and key concepts, chunking, use of imagery and pneumonic, rehearsal/practice and use of self-directed study plans. Besides, they received motivational session to increase their task engagement and persistence with successful outcome and therapeutic yoga (withdrawal pose) along with meditation and relaxation techniques to deal with stress in general. Feedback was obtained immediately after workshop and was repeated after 3 months to inquire if participants imparted strategies learnt in workshop.

Table-I: Baseline characteristics or findings of 240 students before division into exposed and non-exposed group.

	Mean ± SD
Age (years)	18.94 ± 0.63
Perceived stress scale score	22.18 ± 4.6
Gender	**Frequency (%)**
Boys	109 (45%)
Girls	131 (55%)

Data was analyzed by statistical software SPSS version 20. Mean and standard deviation were calculated for quantitative data like age and PSS scores. Frequency and percentage were calculated for qualitative variable like gender and stress level and represented by bar charts. Chi square test was used for qualitative data and independent t-test was used for continuous variables. The *p*-value ≤0.05 was considered as significant.

RESULTS

A total of 250 students were recruited for this study, out of which 240 filled the PSS questionnaire completely. Hence a response rate 93% was achieved. The thematic analysis of Individual answer of students on post-it-notes about what are educational stressors in their opinion revealed following categories; Most common stressors identified were time management (24.1%), lack of guidance from teacher regarding test/exam preparation (20.8%), failure to memorize and retain learned facts (19.1%), lack of peer support (12.5%), frequent test/exams (10.8%) long courses (8.3%) and conflict with teachers/friends (4.1%).

Out of the 240 students, 109 (45%) were males and 131 (55%) were females. Some of the descriptive statistics including base-line and delayed PSS scores among students of two groups are shown in table-I & II. There was no statistically significant difference between the ages of two groups (*p*-values 0.57). Mean PSS

Table-II: Descriptive statistics for two groups.

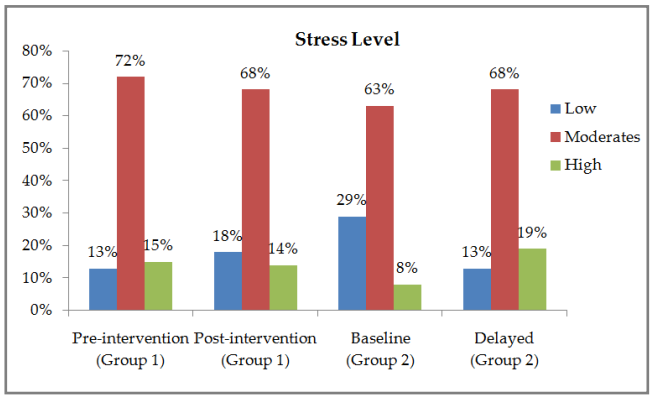
	Group 1 (Intervention) (n=120)	**Group 2 (Non-Intervention) (n=120)**	***p*-value**
	Mean ± SD	**Mean ± SD**	
Age	19 ± 0.43	19 ± 0.56	0.57
Base line perceived stress scale	19 .72 ± 6.04	19.27 ± 0.583	0.583
Delayed perceived stress scale (after 3 months)	16.62 ± 5.48	21.16 ± 6.10	<0.01

Table-III: Levels of stress between two groups before and after 3 months.

Stress Level (based on perceived stress scale scores)	**Group 1**		**Group 2**	
	Pre-Intervention	**Post-Intervention**	**Baseline**	**Delayed**
Low (0-13)	16 (13)	21 (18)	35 (29)	15 (13)
Moderate (14-26)	86 (72)	82 (68)	76 (63)	82 (68)
High (27-40)	18 (15)	17 (14)	9 (8)	23 (19)
p-value	0.670		0.01	

score of whole the class was calculated to be 22.18 ± 4.6. There was no statistically significant difference between base line PSS score of intervention group and non-intervention group (*p*-values 0.583). Mean of delayed PSS score (after 3 months of intervention) decreased to 16.62 ± 5.48 in intervention group and increased to 21.16 ± 6.10 in non-intervention group. Thus, there was statistically significant difference between delayed PSS scores of two groups (*p*-values <0.001), as shown in table-II.

In group-1 (intervention group), before intervention, majority of the participants (72%) fell in moderate stress level and others in low (13%) and high stress level (15%), where as in post intervention majority of the participants again fell in moderate stress level (68%), but in contrast to pre intervention, number of participants with low stress level increased (18%) and number of participants with high stress level decreased (14%). This difference in stress level in pre and post intervention stress levels of group-1 however was not statistically significant. A (*p*-value=0.670) as shown in table-III.



Low (PSS score 0-13), Moderate (PSS score 14-26), High (PSS score 27-40).

Figure: Stress level in two groups.

In group 2 (non-intervention), majority of the participants (63%) had moderate stress and others had low (29%) and high stress levels (8%). After 3 months majority of the participants' stress level was again in moderate range (68%) but number of participants with low stress decreased (13%) and that with high stress increased (19%). This difference among stress level in initial and delayed settings was statistically significant (*p*-value=0.01) table-III.

In their immediate and delayed feedbacks, all the participants of intervention group found workshop very helpful and used various taught strategies subsequently. Most commonly used strategies were study skill tips of approaching task and improve memorization (86%) use of self-directed learning (SDL) plans (77%), time management (69%) and conflict management (32%).

DISCUSSION

This study was designed to explore the perception of stress & stressors among first year medical students, with or without intervention. We not only observed a significant difference of delayed PSS scores but also assessed the response distribution within the groups in pre and post interventions. Besides, study reported some of frequent and controllable educational stressors as perceived by first year medical students of Shaheed Mohtarma Benazir Bhutto Medical University Larkana.

In medical or biological context, stress is a physical, mental or emotional factor that causes bodily or mental tension. It can be caused by various external (environmental, psychological or social situations) or internal (illeness or from a medical procedure) factors called stressors[11-15].

Stress in medical students from around the globe has been well-researched area. Much is known about various stressors during medical life & effect of stress on physical, mental & social health of medical students, however little has been studied about stress & its sources faced by medical students in their formative first year both locally & internationally[16-18]. A cross sectional study, using PSS as part of survey questionnaire on 200 medical students of CMH Lahore reports high level of stress among students related to academic & psycho-social domains especially among female students[2]. In a similar cross sectional study to assess stress severity among Pakistani medical students by Ghazanfar *et al* (2016), large

number of students were found victims to different stresses of varying severity & its negative impact such as thoughts of quitting medical education, aggressive behaviors & suicidal ideas[4]. Our study findings are in line with the above mentioned studies. Studies from both developed countries & other developing countries have recognized various stressors during medical life such as, new personal & professional life styles, excessive academic workload, in sufficient holidays & recreation time, frequency of examinations, vastness of academic curriculum, longevity of medical education & lack of facilities & social support[2-3,9,13,15,18]. We also reported in our study, more or less similar academic stressors but with different frequency i.e. time management (24.1%), lack of guidance from teacher regarding test/ exam preparation (20.8%) and failure to memorize and retain learned facts (19.1%), lack of peer support (12.5%), frequent test/exams (10.8%) long courses (8.3%) and conflict with teachers/ friends (4.1%).

Several past studies about stress management programs for medical students showed its positive role in handling of stress & resistance to range of stressors, however there is no consensus on agreed approaches to teaching stress management despite its proven significance[5,7,8,10,14]. None of the study so far has compared relative effectiveness of different stress management programs or to determine superiority of components of stress management program in terms of therapeutic effect & benefit. The literature has revealed that a wide variety of interventions may be included under the umbrella of stress reduction; e.g., directed and non-directed support groups, relaxation training (including meditation and hypnosis), time-management and coping skills, mind fulness-based stress reduction, and mentoring programs[10]. Some of these interventions were also used as part of the stress management intervention in our study. Three separate studies by Yusoff *et al* (2013) reported that stress management program designed on ″DEAL″ model showed promising results in terms of better students perception & it's easy applicability & thus recommended DEAL model as approach to frame interventions[6]. However, further research is needed to testify its utility & effectiveness as comprehensive approach by other researchers. Also studies are needed to suggest guidelines about customizing intervention tailored to individualize need of students. In our study, validated PSS was used to measure stress, which has been used in scarcity in past & effectiveness of stress management workshop was assessed in improving perception of stress among first year medical students. Strength of study is that components of stress management workshop targeted only those areas, which were identified by students themselves as stressors, thus it was exactly tailored to the needs of students.

CONCLUSIONS

We may conclude in our findings that the commonest academic stressors are time management, lack of guidance from teacher regarding test/exam preparation, failure to memorize and retain learned facts, lack of peer support, frequent test/exams, long courses and conflict with teachers/friends.

Importantly the stress management intervention significantly improves perception of stress among students. Similar studies need to be carried out at various institutions so that some of controllable academic stressors faced by students should be timely managed. Thus it may be concluded that such interventions should be regular part of curriculum.

CONFLICT OF INTEREST

This study has no conflict of interest to be declared by author.

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