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Stressors, Coursework Stress and Coping Strategies among Medical Students in a Private Medical School of Karachi, Pakistan

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ABSTRACT

Objective: To evaluate stressors, coursework stress and coping strategies such as wishful thinking and problem solving coping among medical students. **Method:** A cross-sectional study was conducted in a private medical school of Karachi, Pakistan. A total of 240 students were selected through random sampling technique from first year to fourth year medical students. Validated questionnaires were used for data collection. Data was entered on SPSS version 20. Descriptive analysis was performed to report the frequency of stressors. Pearson correlation test was performed to test correlation between coursework stress and coping, independent t test was performed to test the mean difference of academic stressors on the basis of gender and ANOVA was performed to test the mean difference of stress and coping strategies scores between years of study, p-value less than 0.05 was considered as significant. **Results:** The mean (SD) age of the students was 20.98 (1.46) years. Majority of the students were females. In general, medical students frequently used wishful thinking and problem solving as coping strategies. Academic related stressors (mean=2.48, SD =0.82) were found to be predominant in all the years of study followed by social related stressor. **Conclusion:** Student who were frequently using the coping techniques seem to experience high level of coursework stress. Third year medical students were seen to be more stressed out, followed by fourth year students. Least amount of stress was seen in the first year. Academic requirements were found to be the most prevalent stressor.

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Introduction

Professional education has always been a source of stress for amateurs pursuing a degree in a competitive environment (World Health Organization, 1994) (1). Though it remains a top choice among undergraduates (2), medicine as compared to other professions has been regarded as a highly stressful environment. Studies conducted have highlighted that the medical training exert unwanted effects on physical and mental wellbeing of the students (2-6). The prevalence of psychological distress has been found to be in the range of 30 to 50% (3, 6).

Medical training is considered as the most challenging course as compared to other disciplines - anxiety and stress are considered as common consequences regardless of the admission process and the course duration (5). Multifarious factors like course content, lack of leisure time activity and dealing with suffering and death have been implicated with stress related to medical training (7). In addition, students are also facing the dilemma of cut throat competition, obligation to success and uncertain future (8). These stressors cause unnecessary physical, emotional and mental pressure leading to poor self-esteem and eventually compromised academic performance (9-11). In third world countries like Pakistan, India, Malaysia and Thailand, several studies conducted on this topic have avowed the association of stress with medical education (12, 13). A study conducted in Aga Khan University, Karachi further affirmed that 90% student's feel stressed out at one time or more during the 5 year course (12).

The importance of this association of stress with medical education has been the subject of apprehension for the medical academicians for more than two decades (14). Students on the other hand strive to develop techniques that can ease out the stress and make their student and professional life as a healthy experience (15). This was affirmed by a study conducted by Holahan & Moos (1987) who emphasized upon the idea that people who do not handle their stressors tend to suffer from health problems (16).

Basically, coping with stress and managing it effectively is not merely as a result of the stressful event (i.e. stressor) but the individual's perception and emotional reaction to the stress. Lazarus (1991) and Folkman (1984) suggested there are two types of coping responses. The first is problem focused coping – which is directed towards an attempt to alleviate or eliminate stressful situations. People using problem-focused strategies try to deal with the cause of their problem. For example making a plan and following it. The second coping strategy is emotion focused (e.g., wishful thinking) which involves trying to reduce the negative emotional responses associated with stress. The person who is effectively managing their responses to the stressor will act appropriately according to the reality. Some people perceive stress as negative and coping as a positive, however the relation is not that simple. Stress can be psychologically positive or negative, and the means of coping can be effective or ineffective in meeting the challenge presented by the stressor.

In Pakistan, young generation constitutes almost 40% of the total population and medical students form an important section of this age group (17). Taylor (1998) echoed that stress among students, specifically medical students, have not been enthusiastically researched upon. Our study explored the prevalence and source of stress among a medical student community and also looked into the coping strategies adopted to deal with the problem. We evaluated different stressors and which stressor group has its maximum effect on the medical students. We investigated their perceived university coursework stress and which type of coping strategy is used by students under-stress, either wishful thinking or problem solving strategies. The strategy chosen is thought to be situation specific. In other words different coping strategies are employed according to the context of the stressor.

Method

The present study was undertaken at Ziauddin University. It was a one year project and a total of 240 medical students (60 student were selected from each year). Simple random sampling technique was employed for data collection. We carried out this survey in the middle of the semester to circumvent the stressful time of sessions and university examinations at the end of the semester. Inclusion criteria were all students from first year to fourth year who are studying at Ziauddin University inclusive of repeaters and transfer students. Exclusion criteria were those who failed to consent or were absent at the time of data collection. The nature of survey, applicability of results and confidentiality were explained to the participants. Completion of

questionnaire was voluntary and affirmed that it would not affect the progression of their medical course. The questionnaires were distributed in face-to-face session in lecture hall separately according to the year of study. The students were informed to follow the instructions. Filling of questionnaires took approximately 20 minutes and students were advised to return it on the same day. Some questions with Likert-type responses, some multiple choice questions and few open ended questions were filled by the students. Clearance was taken from the ethical review board prior to the start of study. The study was done with the perusal of the head of the institution and then informed consent was taken from participants.

Data was collected using a questionnaire consisting of three parts: (i) socio-demographic questions, (ii) questions designed to elicit information about the sources and levels of stress and (iii) a validated instrument to measure coping strategies.

Medical student stressor questionnaire (MSSQ)

MSSQ was used to measure six stressors affecting students and has 20 items (19). The Medical student stressor questionnaire was developed to identify the stressors of medical students as well as measure the intensity of stress caused by the stressors. The Cronbach's alpha value of the MSSQ was 0.92. Composite Reliability and Average Variance Extracted values of the six stressors were more than 0.6 and 0.5 respectively indicating good construct reliability to identify stressors. For each potential stressor 5 categories were placed and classified as causing no stress at all, causing mild stress, causing moderate stress, causing high stress, causing severe stress to indicate intensity of stress caused by these items. Recommended scoring method of zero for least intensity of stress and maximum of four for most intensity of stress was used (i.e. scale of 0, 1,2,3,4) as was done by previous studies (20).

Revised Way of Coping Checklist:

The Ways of Coping Checklist (revised in 1985), is an empirically derived inventory composed of problem focused and emotion focused items (confrontive coping, distancing, self-controlling, seeking social support, accepting responsibility distancing, self-controlling, seeking social support, accepting responsibility, escape-avoidance, problem-solving and positive reappraisal (21).The ways of coping checklist measures particular ways in which individuals might cope with a stressful episode in their life (31). This test directly was used to assess coping styles used by medical students and whether the use of wishful thinking or problem-focused coping is related to stress in medical students. The revised Ways of Coping differs from the original Ways of Coping Checklist (21) in several ways. The response format in the original version was Yes/No; on the revised version the subject responds on a 4-point Likert scale (1 = never used; 4 = always used). The revised way of coping checklist which consisted of 66 questions was altered to fit into the context of our research investigation. It comprised of 15 questions that were directly pertaining to coursework stress and coping mechanisms being used by medical students.

Coursework Stress Management

This part was based on questionnaire designed by Ann-Marie Roy (2003) (22). It comprised of 11 questions and measured the stress levels in completing the coursework. Each item was rated in terms of degree of apprehensiveness or concern from strongly disagree (1) to strongly agree (5). The total score was the sum of all scores - high scores reflect high stress.

The data was collected, verified by hand, tabulated, fed into Microsoft excel explored and cleaned for double entry errors and later analyzed by using SPSS version 20. Descriptive statistics were calculated for severity of sources of stress and coping strategies. Mean and standard deviation were taken out for stressor scores. Percentage frequency of occurrence was calculated for each of the stressors. Independent

sample t test was performed to test the mean difference of academic stressors on the basis of gender. After checking the assumptions, ANOVA was performed to test the mean difference of stress and coping strategies scores between years of study. Significant level was set at alpha (α) 0.05 (confidence interval of 95%).

Result

The study results focused on a total of 240 medical participants, comprising of 60 students each from first, second, third and fourth years. The demographic profile of overall sample is shown in Table1. Mean age of the students was 20.98 (standard deviation = 1.46). About 145 students were females (60.4%), as 95 were male (39.6%). Their ages were between 18 to 27 years.

Table 1: Demographic profiles

Year of Study	Male	Percentage	Female	Percentage	Total (N)
First	19	31.7	41	68.3	60 (100%)
Second	27	45.0	33	55.0	60 (100%)
Third	27	45.0	33	55.0	60 (100%)
Fourth	22	36.7	38	63.3	60 (100%)
					240

Current Coursework Pressure

When different medical years were taken into account regarding current coursework pressure, third years n=10 (16.7%) were found to be under maximum coursework pressure as compared to other years. Likewise when course work stress was compared with different years, third years scored the maximum (Figure 1).

Coping Strategies Employed

Two coping traits or strategies were further analysed against the perceived coursework stress i.e. wishful thinking and problem focused coping. It was seen that overall medical student's use wishful thinking coping and problem solving coping almost equally. Graphically, in individual years of study it was seen that wishful thinking was more common among the first year students (Figure 3) and problem focused coping among the fourth years was the greatest (Figure 4). Ironically coping strategies among third years were found to be the least comparing to the course work stress they encounter (Figure 2).

Identifying medical school stressors and their intensity in different years of study as already identified in the methodology all six stressors were found to directly impact the students. Academic related stressor with a mean of 2.48 is the primary stressor among medical school students. Social related stress with a mean of 1.69 is the next major stressor. Drive related stressor was the least significant stressor among all. Group activity related stressor at 1.66 was found to be next on the list and can be described as stress arising in students when working among their peers (Table 2, 3, Figure 5)

When ARS was stratified according to gender, significant difference was observed (p value 0.05) and females were found to endure more academic related stress. When difference among medical years was assessed through ANOVA, maximum ARS was found in first year followed by fourth year (p value 0.001). Post hoc test was applied for finding difference between the groups and significant difference was observed between first years and second years (p value 0.000).

When the extent of pressure was asked from the students in meeting course work deadlines in their present modules, significant difference was found among males and females where n=131

(92%) females were found to be under great deal of pressure as compared to n=75 (79%) males (p value 0.04).

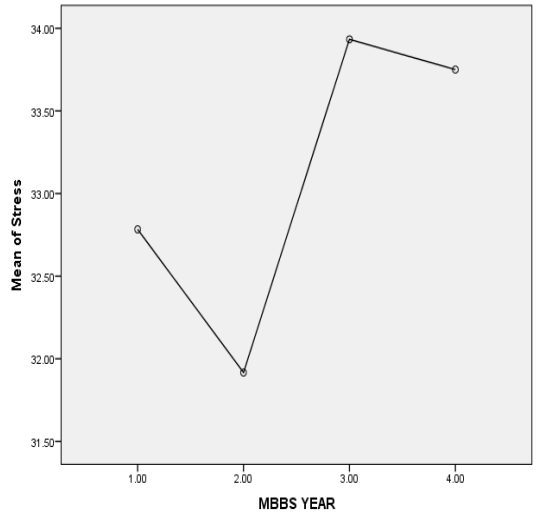

Figure 1: Perceived coursework stress

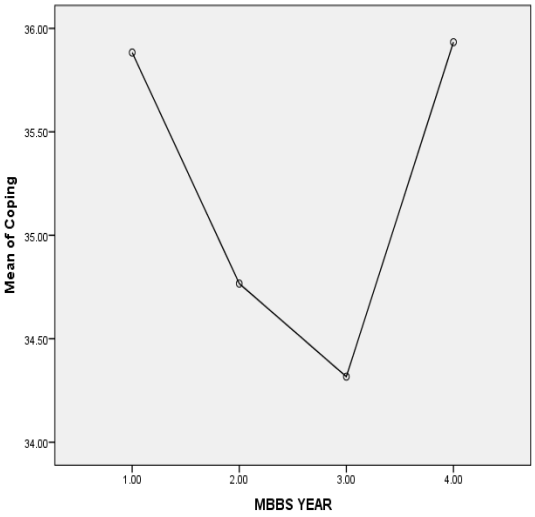

Figure 2: Coping mechanisms employed

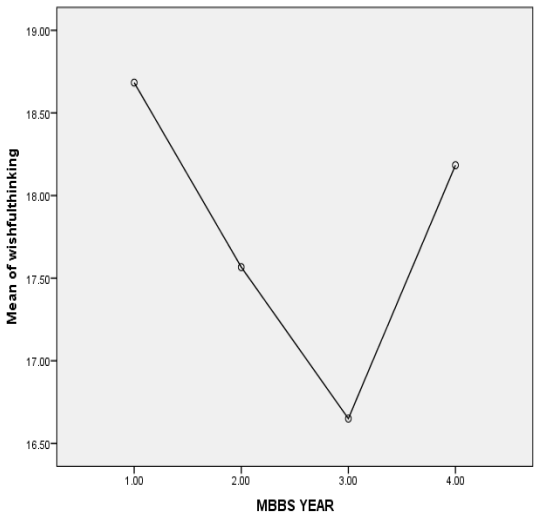

Figure 3: Wishful Thinking Coping Employed in different years of study

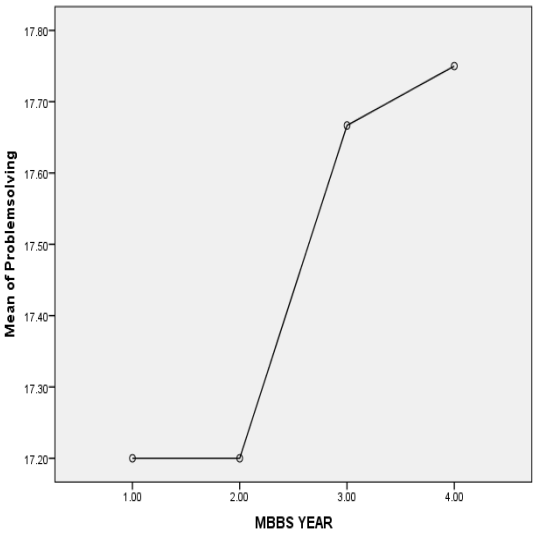

Figure 4: Problem Solving Coping Employed in different years of study

Table 2: Type of Stressors among Medical Students

Stressor	Mean	SD
1) Academic Related Stressor (ARS)		
Tests/Examinations	2.72	1.06
Falling behind in reading schedule	2.09	1.15
Large amount of content to be learned	2.56	1.00
Lack of time to review what has been learnt	2.60	1.13
Heavy workload	2.43	0.99
2) Social Related Stressor (SRS)		
Unable to answer questions from patients	1.73	1.14
Talking to patients about personal problems	1.38	1.19
Facing illness or death of patients	1.97	1.26
3) Group Activity Related Stressor (GARS)		
Participation in class presentation	1.40	1.16
Need to do well (Imposed by others)	1.83	1.23
Feeling of incompetence	1.74	1.29
4) Intrapersonal Related Stressor (IRS)		
Verbal or physical abuse by student(s)	1.38	1.20
Verbal or physical abuse by teacher(s)	1.58	1.25
Verbal or physical abuse by personnel(s)	1.53	1.31
Conflict with teacher(s)	1.45	1.19
5) Teaching and Learning Related Stressor (TLRS)		
Not enough feedback from teacher(s)	1.17	1.18
Verbal or physical abuse by teacher(s)	1.62	1.28
Verbal or physical abuse by personnel(s)	1.62	1.29
6) Drive Related Stressor (DRS)		
Unwillingness to study medicine	1.24	1.33
Parental wish to study medicine	1.28	1.37

SD = standard deviation

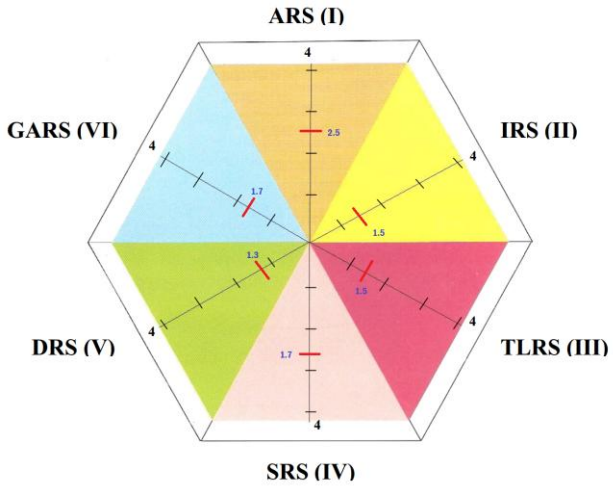

Figure 5: Overall stressors (Medical students, Ziauddin University)

Table 3: Mean scores of stressor domains

Stressor:	Mean & SD	1st Year	2nd Year	3rd Year	4th Year
(I) ARS	2.48± 0.82	2.73	2.19	2.36	2.64
(II) IRS	1.48 ± 1.06	1.70	1.45	1.25	1.53
(III) TLRS	1.47± 1.04	1.47	1.37	1.35	1.47
(IV) SRS	1.69± 0.96	2.02	1.80	1.55	1.41
(V) DRS	1.26± 1.19	1.18	1.23	1.28	1.27
(VI) GARS	1.66 ± 0.95	1.76	1.66	1.43	1.66

Discussion

Medical education in itself has a profound effect not only on the health of the student but also on the quality of life which is expected to change, demanding life style modifications and adaptations (24). This paradigm shift if not tackled properly can result in insufficiency in future clinical practice that will possibly affect patients and health of the community (23).

Stress encountered during medical education may lead to a plethora of detrimental consequences and sustained endurance of stress is injurious to health (25). On the contrary some researchers have recommended subsistence of some stress for learning (11) and studies have even encountered some stress as advantageous as it may lead students to be more active, invigorated and creative (25). Burgeoning literature regarding stress during medical education has been seen in the last few decades as it is observed that medical students admitted making their study setting competitive thereby procreating a stressful environment (11, 26). As elicited by our results which are in line with previous findings that medical students dealt with a variety of stressors like work overload, time shortage and over expectations (27). In India 73% of students experienced stress during medical education (28), 63% in Thailand

underwent the same as measured by Thai Stress Test (29) and 57% in Singapore. Similarly United Kingdom, Australia Malaysia and previous studies from Pakistan produced analogous results (12, 13, 25, 26).

When the most prevalent among the different types of stressors was assessed, our study pointed towards academic stressor. These results complemented earlier work done by Shah et al in Pakistan which had labeled academic examination as the biggest stressor. Studies conducted internationally also endorsing these findings (12, 26, 31-34). The excess of findings all points towards vast course content and examinations and some of the studies specifically the one conducted in Sindh pointed towards time shortage (19, 35, 36). Similar results were quoted from our study where course content, lack of time and examinations were associated with high stress values.

Contrary to the available literature interpersonal related and drive related stressors were found to be insignificant in our study (29, 30, 37). International works have shown problem solving as a more delectable way of countering stress as affirmed by Sarason in his study (38). Wishful thinking strategy has shown to be less beneficial for coping stress which was acknowledged by another study conducted on graduated medical students (39). Our results give weight to existing data as problem solving coping was slightly utilized more than wishful thinking by students. Earlier reports, work done by Roy-Byrne et al and a study conducted in Pakistan showed cognate results (12, 40-41). The study conducted in Pakistan had shown 75% of medical students satisfied by arrogating coping mechanism to counter stress (12).

International work has exhibited that stressors show variation during different phases of medical education as inveterated by our study results (6,42). Antagonist views were observed when Guthrie et al commended no association between year of study and stress (43). When different years of study were subject to stress, international studies proved that though pleonastic in nature each year has unique stressors Research conducted in UK and India showed first year as the most potential target for stress (11). Frequent examinations, workload, complexity and fatigue were the common stressors (44-45)

These findings were contrary to the one demonstrated in our study and others conducted in Malaysia, Thailand, India and Pakistan where higher stress was observed in third year and fourth year students (12, 19, 29, 46). Probably it is the transition from lecture based curriculum to direct patient care in third year that disposes this year to stressful impact (11).

The study faced few limitations. Generalizability of the study results is limited by the characteristic of the sample, which was recruited from a single public medical college. Despite assuring anonymity and confidentiality of their responses underreporting of diverse group of stressors and coping responses might be an issue. Lack of baseline results concerning mental status of students and assessment based on grades was another limitation. However the strengths of the present study cannot be ignored. Our high response rate was similar to work done globally (27). Utilization of a validated questionnaire was another strength. Like previous work our results has clinical importance concerning general health status and quality of student's life (8).

Jittery and aggressive physicians make erratic decisions that can lead to serious tribulations for the patients under their treatment (25). Though exams are a necessity for learning and encouraging students, yet they remain a major source of stress (30). From a students point of view some reckon exams as a burden, for others it is an instigation for learning (30). The stress acquiring nature of medical students is likely to linger in their professional life (47). From 1966 to 1999 over 600 articles have been documented on stress however merely 24 studies have been regarding interventions for stressors of medical students (48). Previous intervention studies have proven to be promising (49-51)

Medical schools should cater not only to medical content also to student lives. Proper time

management can mitigate the heebie-jeebies inherent to many obligations of the course (52). A structured orientation program that addresses expectation at each phase and how to cope with it, teaching self-care skills (52) peer education and counseling an approach highly successful in pedagogy (53) and structured time outs (25) Along with it genial faculty, students discussion groups to counter vast course demands, mentoring, psychological and pedagogical support are just some recommendations to ward off stressors (54). Cross sectional study did not permit us to assess the interactions between stressors and coping strategies over time, future longitudinal studies must take into account the complex and dynamic interactions of both. If students learn to face stressors rather than succumbing to its putative nature and take responsibility during medical education it is expected they take greater care of their own health and serve as a conduit to transfer preventive approach to patients (55).

Conclusion

Experiences in medical school are associated not only with personal and professional development, but also with psychological toxicity and a negative impact on student's quality of life. For student's lack of self-confidence, seclusion and general personal neglect might have serious impact on their personal and social life. Adaptive and maladaptive skills developed in medical education may form the groundwork for future professional adjustment (56) multifarious obligations stemmed as stressors for medical students. Academic stressors were most potential causes of stress. Third year medical students had the greatest intensity of stress, followed by fourth year students. The least amount of stress was seen in first year students. Coping skills may be a useful intervention to mollify the pernicious effects of stress. Problem solving coping strategy was more effective as compared to wishful thinking. Our results speak volumes on frequency of stress in medical students and constitute significant material for program directors, teachers and students to reflect on. It directs the need for preserving and improving the health of medical students during this challenging phase of their lives, characterized by difficulties on one side with satisfaction of accomplishing goals on the other.

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