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Original Article

Perceived Stress, The Sources, Severity and Coping Mechanisms Among Undergraduate Medical Students in a Pakistani Medical School

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ABSTRACT

Objective: To assess the perceived stress, its sources, and severity and evaluated the relationship between causes of perceived stress and their coping mechanisms.

Study Design: Cross-Sectional Survey.

Place and Duration of Study: Army Medical College Rawalpindi and Fuji Foundation University Medical College, Islamabad Pakistan from Jun 2018 to Jun 2019.

Methodology: Four hundred undergraduate medical students of the first and second-year MBBS were included in this study. Voluntary consenting students filled the questionnaires regarding perceived stress, its sources, and severity, along with the coping mechanisms.

Results: Among 400 participants, the male and female students were 55.3% and 44.8%, respectively. Three hundred and forty (85%) students were stressed. Perceived stress was not statistically associated with academic stress (p-value=0.77). The coping mechanisms that were found significant were the 'use of tranquillizer' and 'positive reframing' with p-value of 0.018 and 0.025.

Conclusion: A higher level of perceived stress was found in the medical students. Mostly the stressors were associated with the academic domain and not related to health and psychosocial domains. The coping mechanism used by the medical students were tranquillizers and positive reframing.

Keywords: Coping mechanism, Perceived stress.

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INTRODUCTION

Stress can be defined as "a feeling or condition experienced when a person notices that the demands outweigh the accessible resources the individual has".[1] Prevalence of stress was reported to be 90% among Pakistani medical students.[2] The paradigm of perceived stress accounts for a stressful event affected by the cognitively interceded emotional reaction of an individual to that event. It shows that not only exposure to the event but also how the individual perceives it. The Perceived Stress Scale (PSS) is one of the most renowned tools for measuring psychological stress.[3] It is a questionnaire that is self-reported to measure the extent to which individuals assess situations in their lives as stressful.[4] There are three versions of the PSS. The original instrument is a 14-item scale (PSS-14) developed in English. Due to the extensive worldwide usage of the scale, it has been translated into 25 other languages.[5]

The higher perceived stress experienced by the medical students due to their curricular demands, which exceed the resources they have to deal with them, resulting in perceived stress higher than the general population.[6] The learning ability of the students gets negatively influenced by a higher level of stress. Both mental and physical health are influenced by excessive stress, which also affects the self-esteem of the student along with his/her academic achievements. According to the prior studies, there are three main categories for stressors: academic, social, and health issues.[7] The academics being a potential stressor has also been highlighted by developing countries like Malaysia, India, Thailand, and Pakistan. However, none of these studies uses the perceived stress scale, and neither of them determined the correlation between stress and stressors.[8,9]

Coping mechanisms are defined as an ability to adapt to stressors with conscious and deliberate efforts, which multiple factors can influence. The coping mechanisms were categorized into adaptive and maladaptive. Adaptive coping includes planning, humour, active coping, positive religious reframing, and support. Self-distraction, substance use, denial, venting, behavioural disengagement, and acceptance were placed in maladaptive coping. The more likely coping mechanisms medical students used were

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positive reframing, religion, and denial. Different studies revealed a correlation between perceived stress and coping styles. However, neither of them identified stressors in the participants' lives. To promote physical and mental health, it is vital to understand coping mechanisms associated with the stressors.[10]

Earlier estimates of stress among medical students in Army Medical College and Foundation University Medical College Rawalpindi, Pakistan, were unavailable before this study. Thus, the objective of our study was to evaluate the perceived stress, causes of stress, and their severity. In addition, this was done to evaluate the association between stress-related factors and the coping mechanisms in our settings.

METHODOLOGY

This cross-sectional survey using a self-made questionnaire was conducted at Army Medical College and Foundation University Medical College, Rawalpindi Pakistan from January 2018 to June 2019. Before data collection, the Research Committee of Army Medical College and Foundation University Medical College attained official permission. The written and informed consent were obtained from the participant medical students. They were guaranteed their privacy being maintained regarding their information, and they were also given the right to deny participation. The survey was conducted during recess time so their study schedule could not be interrupted.

Inclusion Criteria: Undergraduate medical students of the first and second-year MBBS were included in this study.

Exclusion Criteria: Non-consenting individuals were excluded from the study.

400 undergraduate medical students of the first, second, and third-year MBBS classes at Army Medical College and Foundation University Medical College participated in this study. Three questionnaires were distributed in relation to the perceived stress, its sources, and severity, along with the coping mechanism. The PSS constituted questions, 14 in number, varied from 0-4 for every point, ranging from never, almost never, sometimes, fairly often, and very often, respectively. The questions inferring response and emotion directed towards a positive side were scored in the reverse order because the higher the score of PSS-14, the greater the stress level perceived by the students. On four positive items (0 = 4, 1 = 3, 2 = 2, 4=0) by reversing, the scores were obtained and then adding all 14 items.[11,12] The points positively detailed were 4, 5, 6, 7, and 10. A score higher on the scale demonstrates a higher stress level, and a low score demonstrates a lower level of stress. The potential range of the PSS-14 was from 0 to 56.[13] Also, stratified quartiles were the designated division for the PSS score. The above and the lower two quartiles were consolidated (28 being the operational cut-off value for the upper bound) and were regarded as stressed and not stressed correspondingly. A score of ≥28 categorized high perceived stress.[14]

The questionnaire with potential stressors was taken from a similar study by Yusufov *et al*. The stressors, 32 in number, were gathered and listed as health, psychosocial, and academic.[13] The frequency of incidence of every potential stressor was categorized as never, sometimes, and often and scored as 0, 1, and 2. The Likert scale from severe to severe was used to grade the severity of every stressor. Finally, it was inquired from the students whether the stressors had been affecting them.

The English deciphered versions of the Brief COPE were used to assess the coping mechanism. The coping mechanism is grouped into 12 categories in the Brief COPE: active coping, denial, behavioural disengagement, self-distraction, positive reframing substance use, religion, emotional support, venting, planning, humour, and acceptance.[15] In this survey, one question from every group was used. The translated English version of the Brief COPE was presented to experts in the field to validate this. Cronbach's alpha was used to verify the statistical validity of this abbreviated translated version of the Brief COPE, and the value came out to be .79, considered acceptable for reliability (ALPHA.70),[16,17] and above the threshold value.

Data was analyzed using Statistical Package for the social sciences (SPSS) version 23.00 and MS Excel 2016 software. Mean±SD was calculated for the continuous variable. Frequency and percentage were calculated for categorical variables. The chi-square test was used to find the association of coping mechanisms with the perceived stress scale. The *p*-value ≤0.05 was considered significant.

RESULTS

The researchers analyzed four hundred students (n=400) in the current study. The percentages of Military Cadet (MC), National University Medical Sciences cadets (NUMS), Paying Cadets (PC), National University Medical Sciences Foreign Cadets (NFC),

Army Reserved Seat Cadets (ASC) and Foundation University Medical College students (FUMC) was 34%, 19.3%, 10.3%, 2.5%, 7.5% and 26.5% respectively. The percentage of male and female students was 55.3% and 44.8%, respectively. The border and non-border percentages were calculated to be 56% and 44%, respectively. The percentages of medical students participating from 1st year, 2nd year, and 3rd year were 39%, 29.8 %, and 31.3%.

The mean PSS stress, academic stress, psychological stress and health were 31.79±4.91, 10.75±3.28, 15.74±5.57 and 5.60±2.70, respectively shown in Table-I.

Table-I: The descriptive statistics for perceived stress scale and its sources(n=400)

Perceived Stress Scale and Sources	Mean± SD
Perceived Stress Scale	31.79±4.91
Academic	10.75±3.28
Psychosocial	15.74±5.57
Health	5.60±2.70

Out of 400 students, 340 (85%) students had stress. At the same time, the remaining 60 students (15%) did not show it.

There was no significant association of PSS with academic stress or psychological and health causes. As seen in Table-II, the participants most frequently used religion, positive reframing, venting out, and accepting the coping mechanisms in the situation. When coping mechanisms were put in comparison to the levels of perceived stress, using tranquillizers and positive reframing coping mechanisms was associated with increased perceived stress.

Table-II: Association of Coping Mechanism with Perceived Stress scale (n=400)

Coping Mechanism	PSS <28 (n=60) n (%)	PSS >28 (n=340) n (%)	*p*-value
Social support	35(58.3)	228(67.1)	0.403
Use of emotional support	30(50)	209(61.5)	0.663
Accepting the situation	39(65)	247(72.6)	0.580
Using internet	34(56.7)	207(60.9)	0.622
Religion	48(80)	294(86.5)	0.293
Distraction by Humor	39(65)	217(63.8)	0.637
Denial	38(63.3)	188(55.3)	0.324
Distration through exercise	37(61.7)	225(66.2)	0.614
Avoiding the media	21(35)	137(40.3)	0.217
Self-distraction	17(28.3)	124(36.5)	0.281
Use of tranquilizers	26(43.3)	98(28.8)	0.018*
Smoking	16(26.7)	78(22.9)	0.966
Venting out	42(70)	251(73.8)	0.651
Positive reframing	40(66.7)	272(80)	0.025*

**Percentage are for respondents who scored this coping mechanism as "uses a medium amount to a lot of the time"*

DISCUSSION

A total of two-thirds of the students were reported to have high levels of perceived stress, with numerous stressors combined with higher perceived stress, albeit we did not find a plausible association of the stress perceived with any of its causes. 'Use of tranquillizer' and 'positive reframing' were the coping mechanism used to reveal stress by our study participants. In our study, we found a high level of perceived stress in students (85%). Research from Agha Khan University explained that 90% of the students were undergoing a higher amount of stress throughout their course.[18] Perez *et al*. reported that two-thirds of their Latino students had a high level of perceived stress.[16] It is reported in another study in India, which is quite similar to our study regarding the stress and stressors as our surroundings, curriculum, and circumstances are more or less relatable.[19] The basis for a similar study seems to be that PSS is used as a confirmation criterion in all the studies mentioned above to determine perceived stress. Secondly, this PSS comprises 14 questions has an ingrown steadiness of 0.85 (coefficient of Cronbach) and test-retest dependability through a small retest pause (several days) of 0.85. This effective criterion seems to be the reason for similar results in all the studies mentioned above. However, the similarity of these results is more pronounced because we have the same pattern of curriculum, textbooks, teaching techniques, and surrounding circumstances.

Shah *et al.* studied the perceived stress, sources, and severity of stress among medical undergraduates in CMH Lahore.[3] In their study, the medical students, stated a relatively higher level of stress perceived but its association with the self-given academic presentation was not significant, as was the case in our study.

According to the study held in CMH Lahore, medical students experienced psychosocial issues associated with period constraints for entertainment, family, friends, and self due to a hectic study schedule.[3] Another reason could be inadequate recreational facilities provided by the college, as reported by the students. Nevertheless, on the other hand, our students, due to their tough military training schedule, are better at their time management skills. Secondly, Military Cadets are paid a stipend to meet their daily needs, providing them with a respite from daily financial stressors and improving their mental health. Secondly, they undergo a daily exercise routine, as exercise is associated with the release of anti-stress

hormones. As a result, they are less prone to psychosocial and health issues.[20] In addition, they are offered free health care facilities, including medicines on campus hence decreasing the health-related stressors. Due to free medical care and awareness about good health and hygiene, the students maintain good health.

Participants most frequently utilised coping mechanisms 'religion,' 'positive reframing,' 'venting out,' and 'accepting the situation.' When the mechanisms to cope were associated with levels of stress perceived, tranquillizers and positive reframing were the mechanisms to cope that were associated with higher stress perceived. Their study on the Latino adult population evaluated the relationship between reasons for stress perceived and the mechanisms to cope.[16] In the study, the coping mechanism that the students involved in the research more often used 'positive reframing,' 'self-distraction, 'planning,' 'acceptance,' 'active coping' and 'religion.'

Furthermore, when the mechanisms to cope were put in comparison to the levels of stress perceived, non-acceptance was the only mechanism to cope, which was related to stress perceived. More or less similarity is found in our results in terms of their occurrence. The difference in coping mechanisms seems to be because their research was conducted on the mass adult population. At the same time, our study was done on undergraduate medical school students.

Moreover, to better evaluate the research, this link patterns to identify elevated stress perceived in addition to the other causes that impact the utilization of this particular mechanism to cope, which could significantly lower the stress perceived and health hazards. Secondly, the participants having stressors related to their academics were more susceptible to psychosocial stressors. USA-based research stated that giving students stress management guidance and selfcare methods would be helpful. Attention is required to oversee the implementation of such initiatives, which would be easily carried out in the school environment.[21]

CONCLUSION

The undergraduate medical students who reported a high-stress level perceived 'tranquillizer use' and 'positive reframing' are the most frequently used coping mechanisms.

Conflict of Interest: None.

Author's Contribution

DKR: Substantial contributions to the conception, Drafting, Final approval, AN: Data analysis, Study design, Final approval, BR: Data analysis, Interpretation of data, Final approval.

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