



## Original Article

## Perceived Stress and Its Physical Presentation During Exam: A Study of Central Park Medical College

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## ABSTRACT

Stress during examination is a global issue. Researches show that the physical impact of stress includes various clinical symptoms and diseases. This study was designed to analyze the clinical presentation of stress in medical students during professional examination and the coping strategies practiced by them. **Objective:** To evaluate the causes of stress during exams and its physical presentation in medical students. **Methods:** A cross-sectional survey was conducted at Central Park Medical College, from November 2022 to February 2023. A validated questionnaire was used as a data collection tool. Medical students from 1<sup>st</sup> year to the 4<sup>th</sup> year of the age group 18 to 25 years were selected using the convenient sampling method. The data were transcribed into SPSS version 26.0. The significance of the results was decided at a p-value of  $\leq 0.05$ . **Results:** The most frequent clinical symptom during stress was fatigue, followed by headache. These symptoms varied significantly among male and female students ( $p \leq 0.05$ ) for headache, tense muscles, depression, and decreased blood pressure. The portion regarding coping mechanisms exercised by students during stress, revealed religious activities (35%) followed by music (22%) and sleep (18%) respectively. The study also revealed that the biggest support medical graduates get during stress is from their friends (45%). **Conclusions:** This study concluded that the main cause of stress during professional exams is fear of disappointing parents. This stress presents in the form of physical symptoms like excessive fatigue, headache, and anxiety. Where the support system during this time is friends for most respondents, the most commonly exercised coping mechanism is performing religious activities.

## INTRODUCTION

Stress during examinations or assessments is a global issue with alarming statistics showing high suicide attempts during exams, in many developed countries of the world [1]. It is the emotional disturbance that is experienced by students during test preparation and test-taking situations. Since medical studies are considered among the most difficult ones, the exam stress is also very severe. It leaves many adverse effects on the mental as well as physical health of students [2]. During their studies, many medical students may face a variety of academic and personal obstacles, but little data are available about their experiences. The influence of stress, involvement in school, and how they relate to medical students' general well-being is concerning. A study conducted by Buch et al.,

on school-going children in Surat city of India, documented the factors that lead to examination stress. The findings revealed that anxiety, dread of forgetting, nervousness, and fear of failure in exams were the most prevalent stressors [3]. Research shows that the physical impact of stress includes headaches, weight issues, disturbance of the menstrual cycle, and sleep disorders [4-7]. Some studies have proven its impact on mental health, including attention deficit disorder, anxiety, depression, fear, eating disorders, etc [8]. Exam stress is often accompanied by the triad of cynicism, helplessness, and burnout. A cynical attitude has a negative outlook on one's studies, peers, teachers, and patients. According to a study that was conducted in 2021, medical students were found to have a

higher prevalence of burnout compared to students in other educational courses [9]. The emotional anguish and health problems, as well as the loss of time, energy, and money, are just some of the personal, psychological, and financial effects that are relevant as a result of exam stress, burnout, and dropping out among medical students [10]. Another variable of significance regarding exam-induced anxiety is the "coping mechanism" chosen by students. According to research, these coping strategies can be divided into adaptive and maladaptive ones. Adaptive coping strategies include seeking assistance, knowledge, and support from others, acknowledging, scheduling, and redefining problems with levity or faith. Student participation in school is mostly associated with adaptive coping. Non-adaptive coping strategies include distraction, disassociation, self-pity, denial, and drug abuse. Non-adaptive coping strategies are linked to burnout [11]. Spending time with close companions has an adverse association with fatigue, burnout, and general distress manifested as depression and anxiety [12]. It is reasonable to anticipate that not all coping methods will be equally efficient in the management of stress. Some coping techniques might be beneficial to one's health (adaptive), whereas maladaptive coping approaches can be harmful to one's health [13]. The curriculum and workload of medical education is stress provoking. Despite being aware of the causes and consequences of stress and anxiety on their physical and mental health, medical students are still most prone to it. Therefore, awareness of the matter is very important, along with an analysis of the factors leading to it and the actual effects of exam stress on mental and physical health, to come up with ways to prevent it. The rationale of the study was to identify different presentations of stress so that it can be identified earlier and addressed with appropriate help and support. This study aimed to analyze the causes and symptomatic presentation of stress experienced during professional examination by medical students of Central Park Medical College and its impact on the individual's mental and physical health as well as the coping strategies practiced by them.

## METHODS

A cross-sectional survey was conducted at Central Park Medical College, from November 2022 to February 2023. This study was approved by the Institutional Review Board of Central Park Medical College (CPMC/IRB-No/1368). The sample size was calculated as 329, using the WHO sample size calculator, and for better accuracy of results, more data were collected than the calculated sample size. A total of 298 medical students of MBBS from 1<sup>st</sup> year to 4<sup>th</sup> year, age group 18 to 25 years were selected using the convenient sampling method. Participants outside of the age group and students of other allied health sciences,

graduates, and post-graduates were not included in the study. The participants were explained the aim of the research and written as well as verbal consent was obtained. The perceived stress scale and Stress symptoms-frequency assessment scale were modified by adding the possible causes of stress for a medical college undergraduate student, validated with a cronbach alpha of 0.84, and was distributed among the participants to assess the causes and clinical symptoms experienced during their professional examinations as well as the coping strategies practiced by them. The data were collected during the preparatory leave of respective exams, after the completion of the session when students were preparing and appearing in their final professional exam. The questionnaire was divided into three sections. The first part estimated the stress level of respondents according to the standard perceived stress scale [14]. At the end of the section, the score was calculated by adding the selected value against each item. Score 0-13 was considered low stress, 14-26 was considered moderate while score 27-40 was considered high perceived stress. The second component evaluated the symptomatic manifestations in the students during the exam stress [14]. The list included a total of 20 different symptoms on a Likert scale from 0-4 with 0 as never, 1 as rarely, 2 as sometimes, 3 as often, and 4 as very often. The third section evaluated the coping mechanisms and emotional support for medical students. Microsoft Excel was used to organize the data, and the software Statistical Package for Social Sciences (SPSS) version 26.0 was used to perform the analysis of the data. Statistical significance was set at P value  $\leq 0.05$ . For descriptive analysis, data were assessed and presented in the form of frequency and percentage, and the results are presented in the form of tables and figures. The data on the Likert scale were presented as mean scores. The statistical significance between the mean scores in both genders was compared by using non-parametric tests like chi-square and Mann-Whitney U test.

## RESULTS

A total of 60 students from 1<sup>st</sup> year, 59 students from 2<sup>nd</sup> year, 91 students from 3<sup>rd</sup> year, and 88 students from 4<sup>th</sup> year participated in the research. Among 298 students, 187 (62.75%) students were female, and 111 (37.24%) students were male (Table 1).

**Table 1:** Demographic Data of Research Participants

Parameter	1 <sup>st</sup> year	2 <sup>nd</sup> year	3 <sup>rd</sup> year	4 <sup>th</sup> year
Male	15	20	30	46
Female	45	39	61	42
Total	60	59	91	88
Average Age	20.0	20.8	21.8	24.2
Average Weight	60.4	61.6	63.1	69.9

The stress levels of students were calculated by using the perceived stress scale. Score 0-13 was considered low

stress, 14-26 was considered moderate while score 27-40 was considered high perceived stress (Table 2).

**Table 2:** Perceived Stress Scale Score in Both Genders

Score	Total	Males	Female
0-13 (Low Stress)	0	0	0
14-26 (Moderate Stress)	145 (49%)	54 (48%)	91 (49%)
27-40 (High Stress)	153 (51%)	59 (52%)	94 (51%)
Total	298	113	185

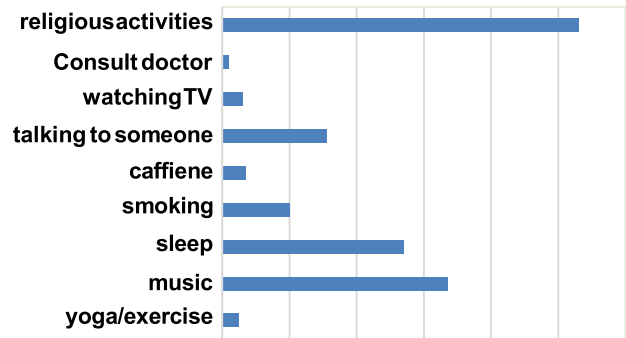
The most common symptom is fatigue with the highest mean of 3.76 whereas in gender wise observation the most common symptom in male is fatigue, followed by anxiety and headaches. In female, the most common symptom is fatigue followed by anxiety headache, depression, and tense muscles (Table 3).

**Table 3:** Mean Scores and Gender Distribution of Clinical Symptoms of Stress in Undergraduate Medical Students

Symptoms	Mean Score (Likert Scale)	Mean Score in Male	Mean Score in Female	p-Value
Headache	3.36	1.87	2.17	≤0.05*
Tense Muscles	3.42	1.77	2.06	≤0.05*
Fatigue	3.76	2.23	2.42	≥0.05
Diarrhea	1.91	0.97	1.03	≥0.05
Cramps	1.41	1.32	1.46	≥0.05
Flatulence	1.56	1.02	.93	≥0.05
Constipation	.96	.86	1.01	≥0.05
Weight Gain	1.02	1.06	.99	≥0.05
Weight Loss	1.04	.92	1.12	≥0.05
Increased BP	1.33	1.23	1.13	≥0.05
Decreased BP	1.07	.80	1.24	≤0.05*
Restlessness/Tics	1.83	1.72	1.89	≥0.05
Anxiety/Phobias	2.18	2.14	2.20	≥0.05
Irritability	1.99	1.86	2.07	≥0.05
Difficulty Falling Asleep	1.79	1.75	1.81	≥0.05
Insomnia	1.61	1.57	1.63	≥0.05
Excessive Sleep	2.09	1.83	1.58	≥0.05
Anger/Hostility	1.91	1.85	1.95	≥0.05
Depression	2.03	1.86	2.13	≤0.05*
Eating Too Much	1.73	1.68	1.76	≥0.05
Eating Too Little	1.23	1.15	1.27	≥0.05

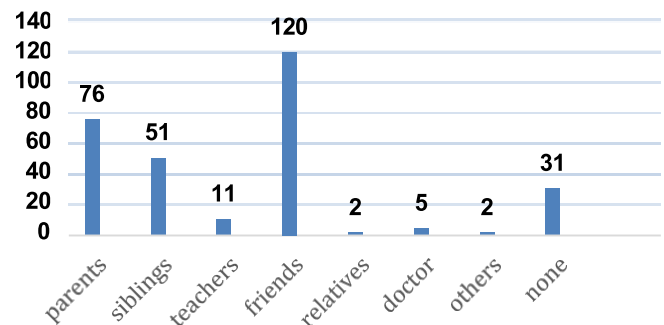
\*significant difference between the two genders

Religious activities were the most commonly practiced coping mechanism followed by listening to music and sleep (Figure 1).



**Figure 1:** Frequency Distribution of Coping Mechanisms Adopted to Relieve Stress

When asked about the human support during stress, most common source was friends, followed by parents and siblings (Figure 2).



**Figure 2:** Frequency Distribution of Support Sources During Stress

## DISCUSSION

Medical studies are considered stressful due to the expanse of syllabus and the depth and significance of material to be learned. The examination process is also rigorous and nerve racking. According to a study conducted in the Middle east, by Ragab et al., the estimated prevalence of stress in medical students is up to 31.7% (p < 0.05) [15]. This study aimed to examine the etiology and clinical presentations of stress among medical students during professional examinations, and its effects on their mental and physical well-being. Additionally, the study sought to explore the coping mechanisms employed by these students. Similar studies have been conducted in the past on students of different fields. In 2021, a descriptive cross-sectional survey was carried out at Pakistani Medical Colleges, and the results revealed that stress, anxiety, and depression were quite common among medical students. Undergraduate medical students had depression in 67.4%, anxiety in 62.6%, and stress in 72.5% of cases. Compared to men, women were more likely to experience stress, anxiety, and depression [16]. Psychological diseases like anxiety and depression, in addition to physiological issues like high blood pressure and delayed wound healing, can all be influenced or caused by stress. Among physical issues brought on by stress, the most common complaint was a persistent headache, as reported by 84.5% of the

participants of a study [17]. Gender was shown to be significantly associated in a comparative analysis with disrupted sleep, breathing difficulties, persistent headaches, and muscle pains; on the other hand, there was a significant relationship between age and weight increase, TMJ discomfort, and oral cavity ulcers. Age and weight increase were shown to be significantly correlated by regression analysis [17]. This is very similar to current research which showed that exam stress leads to headache, fatigue, diarrhea, depression and many other serious complications. The purpose of present study was to highlight the effects of exam stress on body and understand how young generation deals with it so that it could be controlled and dealt at an administrative level. If we as educationists, fail to comprehend the significance of it, this stress is proven to be potent enough to lead to suicidal attempts by medical students [18]. Research conducted has shown that suicide rates among medical students are sharply rising. Numerous factors, such as exam failures, rejection from desired subjects or institutions, bullying, sexual abuse, life dissatisfaction, bullying, depressive disorders, psychological disorders, family issues, parental separation, forced subject selection, pressure from teachers, an overwhelming workload of coursework, the actions of teachers, and numerous other factors, are forcing students to consider suicide. It's not only alarming but highly disturbing to consider that the burden of studies can cause enough stress to influence young brains to end their own lives. This study reflects that students consider help from their family & friends, to ease their trouble yet many students never seek help. Around 40% of participants in this research said that their friends were their biggest support system. This is probably because they are going through similar situations and can understand each other better as compared to others. This indicates that parents and teachers need to develop a more empathetic relationship with the children so that they can seek guidance and strength from them. This will also help in relieving the cause of stress in the students as the main fear or stressful factor for students during exams was that they were afraid of disappointing their parents. Research proved that Systems of passing and failing grades as well as long-term, collaborative learning strategies supported by peers seem to be beneficial for students' overall wellbeing. Furthermore, engaging in fulfilling hobbies, building social support systems, and strengthening resilience can help medical students feel less distressed on a personal level. To ensure student welfare, faculty and administrative development is equally essential [19]. This study provides a solid basis for policy-makers in the medical field to improve present assessment practices while simultaneously boosting the well-being of students. Rigorous interventions in the medical curriculum, teaching methodology, grading system, and development of student support system can

help reduce the stress and associated illnesses to a great extent and overall student performance may also improve [20]. Instead of concentrating efforts on achieving success in exams and making progress, it is necessary to first establish a level of trust with students and then collaborate with them to improve their sense of who they are and how they engage with their education.

## CONCLUSIONS

The main cause of stress during professional exams is fear of disappointing parents. This stress presents in the form of physical symptoms like excessive fatigue, headache, and anxiety. Where the support system during this time is friends for most respondents, the most commonly exercised coping mechanism is performing religious activities. There is a need for further research to broaden the sampling and expand its coverage beyond medical institutions to include groups from other educational fields.

## Authors Contribution

Conceptualization: K

Methodology: MM, FA, LG

Formal analysis: MM, FA

Writing-review and editing: K, MM

All authors have read and agreed to the published version of the manuscript.

## Conflicts of Interest

The authors declare no conflict of interest.

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