

# Factors associated with perceived stress in students appearing for medical university entrance test: A cross-sectional study

Saleem Ullah Abro<sup>1</sup>, Qurratulain Saleem<sup>2</sup>, Amna Begum<sup>3</sup>, Jamal Ara<sup>4</sup>, Nabeel Khan<sup>5</sup>, Taif Hameed<sup>6</sup>

<sup>1</sup> Assistant Professor Physiology, Baqai Medical University, Karachi.

<sup>2</sup> Assistant Professor, Karachi Medical and Dental College, Karachi.

<sup>3</sup> Associate Professor Obstetrics & Gynecology, Karachi Medical and Dental College, Karachi.

<sup>4</sup> Associate Professor Medicine, Karachi Medical and Dental College, Karachi.

<sup>5</sup> Associate Professor Oral Biology, Karachi Medical and Dental College, Karachi.

<sup>6</sup> Senior Lecturer, Mekran Medical College, Turbat.

## Author's Contribution

<sup>1,2</sup> Conception of study

<sup>3,5</sup> Experimentation/Study conduction

<sup>4,6</sup> Analysis/Interpretation/Discussion

<sup>1,2</sup> Manuscript Writing

<sup>3,4</sup> Critical Review

<sup>5,6</sup> Facilitation and Material analysis

## Corresponding Author

Dr. Saleem Ullah Abro,

Assistant Professor Physiology,

Baqai Medical University,

Karachi

Email: drsaleemullah@baqai.edu.pk

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## Abstract

**Objective:** To evaluate the factors or stressors associated with perceived stress in students appearing for university entrance test-cross sectional study.

**Materials and Methods:** It is a descriptive cross-sectional study, duration was two months from August to September 2021. The Ethical & scientific review committee of KMDC of Karachi has given written permission. The non-probability convenience sampling technique was used. The Rao soft calculator was used for Sample size and 377 (5% margin of error and 95% confidence level) were calculated. Students were enrolled from four Entrance test/ aptitude training centers in Karachi with written informed consent. The students were having a past history of antipsychiatric illness or a history of taking drugs like antidepressants or anxiolytics were excluded. Cohen's scale was used for the evaluation of perceived stress in students with a degree of perceived stress. The statistical Analysis was done by using IBM-SPSS version 23.0, Counts with percentages, Pearson Chi-Square test, and Binary Logistic Regression Analysis for the identification of Risk Factors of Stress. A P-value less than 0.05 was considered statistically significant.

**Results:** The association of perceived stress was significantly associated with the Mother's job/ working Mother ( $p < 0.05$ ) in our study participants. Anyone from family or friends who was suffering from Stress showed a significant ( $p < 0.05$ ) association with perceived stress (moderate/high level) in our study.

**Conclusion:** In our study results, factors associated with perceived stress in students, showed working mothers are responsible for the development of stress in students.

**Keywords:** Binary logistic regression, Perceived stress, Students.

## Introduction

The meaning of stress varies according to the circumstances in daily life, which we are facing. Hans Selye described that It is the non-specific response to the stimuli (psychological/ sensory) in the human body and described the four types, like eustress or good stress or positive stress, distress or bad stress or negative stress, hyper stress or over stress and hypo stress or under stress.<sup>1</sup> Stress is always concerned with demands (physical or psychological), which exert effects (physically or mentally) on human health, due to stress normal homeostasis of the body is disturbed. It is managed and maintained by physiological and behavioral changes in the human body and ultimately regains the normal internal environment in the body by adaptive response against stress.<sup>2</sup> Stress is the capability of the human body to cope with these demands or environmental factors. The stress (perceived or potential) exerts effects on students' health, by the development of psychological (depression, anxiety, and stress) diseases.<sup>3</sup> The global prevalence of psychological diseases like depression, anxiety, stress and psychological distress, and sleep disturbances are 28.0%, 26.9%, 36.5%, 50.0%, and 27.6% respectively.<sup>4</sup> College students are a unique group of individuals, who are facing many stressful events in this critical period of life which can lead to the development of depression, anxiety, stress, poor academic performance, and other systemic disorders.<sup>5</sup> Stress results from the interaction of people with their environment or their surroundings, as that, is perceived as a threat. As college students are facing various pressure or stressors or factors like academic pressure, social pressure, physical pressure, emotional pressure, familial pressure or parental pressure, financial pressure, and cultural pressure on friends or relatives, or family, which impairs learning abilities and decline in the performances in studies or failure in achieving best grades in exams.<sup>6</sup> Academic performance is necessary for achieving success in the future or getting admission in professional universities (medical or engineering), as to achieve social standing or status regarding other professions so that students work hard and compete in exams.<sup>7</sup> This academic stress initially provides the stimulation or motivation for studies, but later on, prolonged stress exerts negative impacts on academic performance and the development of health issues.<sup>3</sup> The current study aimed to evaluate the factors or stressors associated with perceived stress in students appearing for a university entrance test-cross sectional study. Our

research will help to fill the gap between factors or stressors that leads to the development of perceived stress, in students who are preparing to appear in the university admission test (M-CAT).

## Materials and Methods

It is a descriptive cross-sectional study, which was conducted in students of degree college students of the pre-medical group. The study duration was two months from August to September 2021. The Ethical & scientific review committee of KMDC of Karachi has given written permission. The non-probability convenience sampling technique was used. The Rao soft calculator was used for Sample size and 377 (5% margin of error and 95% confidence level) were calculated, but data was collected from 498 students.<sup>8</sup> All were enrolled, as they were attending the tuition classes in Entrance test/ aptitude training (M-CAT) centers, of Karachi, so we included all students with taking written informed consent. The students were having a history of antipsychiatric illness or a history of taking drugs like antidepressants or anxiolytics were excluded. Cohen's scale was used for the evaluation of perceived stress in students with a degree of perceived stress.<sup>9</sup> This scale has 10 items with 5 points Likert rating scale ranging from "0" never to "4" very often and 4, 5, 7, and 8 items are reversed with sum across and all 10 items with results of range 0 to 40. The higher the Cohen's scale, the greater will be the degree or level of perceived stress with the level of mental well-being. The reliability and the validity of Cohen's scale vary from 0.78-0.98 according to different researchers.<sup>10-13</sup>

**Statistical Analysis:** The statistical Analysis was done by using IBM-SPSS version 23.0, Counts with percentages, Pearson Chi-Square test was used to check the association of perceived stress levels with respect to studied baseline qualitative data sets, and Odds ratio was calculated by Binary Logistic Regression Analysis for identification of Risk Factors of perceived stress. A P-value less than 0.05 was considered statistically significant.

## Results

The association of stress with baseline characteristics was analyzed and results showed low stress in samples 78.6% were female, 83.8% were regular education type, 69.8% were from government college, 24.6% from the joint family system, 89.6% have a

father with some occupation, and 8.7% have mother as a working woman, in moderate stress samples 79.6% were female, 91.9% were regular education type, 72.8% from government college, 31.1% from the joint family system, 90.8% have a father with some occupation, and 23.7% have a mother as a working woman whereas in high-level stress samples 87.9 were female, 85.7% were regular education type, 66.2% from government college, 29.3% from the joint family system, 92.9% have a father with some occupation, and 17.8% have a mother as a working woman. Pearson Chi-Square test gives a significant association of stress levels with samplings in working mothers were  $P < 0.05$  (Table 1, Figure 1). The risk for moderate/high-level stress among the samples using binary logistic regression, results showed samples older samples, joint/nuclear family system, more than one number of earners in the family, more than one number of siblings in the family, ending birth order,

having siblings who appeared in the entrance test, sample with 7 - 8 hours of sleep out of 8 hours was found less likely for the stress with a negative association, however, samples with female gender, regular education, high previous percentages, having father or mother with any occupation, addiction of taking power naps, taking 1 - 2 hours sleep per day, have awareness of stress and social media as a source of information, ever been diagnosed with the problem of stress, receive any treatment/counseling for stress, have a person in the family or friend who suffering from stress and receiving treatment for the same were found more likely for the stress. The factors showed a positive association with stress factors like mother working, social media, print media, digital media any seminar, ever been diagnosed with stress, received treatment for stress, having a person in the family with stress and receiving treatment for the same were gives significant association,  $p < 0.05$  (Table 2).

**Table 1: Association of Perceived Stress Scale (PSS) with baseline Characteristics of Studied Samples**

Characteristics		Description in words						p-value
		Low Stress (n=126)		Moderate Stress (n=206)		High Stress (n=157)		
		N	%	n	%	n	%	
Gender of student	Male	27	21.4	42	20.4	19	12.1	0.06
	Female	99	78.6	164	79.6	138	87.9	
College	Government	88	69.8	150	72.8	104	66.2	0.40
	Private	38	30.2	56	27.2	53	33.8	
Family type	Joint	31	24.6	64	31.1	46	29.3	0.07
	Nuclear	91	72.2	125	60.7	106	67.5	
	Single parent	4	3.2	17	8.3	5	3.2	
Is your Father Working	Yes	112	89.6	187	90.8	145	92.9	0.59
	No	13	10.4	19	9.2	11	7.1	
Is your Mother working	Yes	11	8.7	49	23.8	28	17.8	<0.01*
	No	115	91.3	157	76.2	129	82.2	

\* $p < 0.05$  was considered statistically significant using the Pearson Chi-Square test

**Table 2: Identification of Risk Factors of Perceived Stress using Binary Logistic Regression Analysis**

Risk Factors	Odds Ratio (95% Confidence Interval)	p-value
Age (years)	0.84(0.66-1.06)	0.138
Female	1.35(0.81-2.24)	0.245
Regular Education	1.59(0.75-3.36)	0.226
Previous Percentage	1.02(0.99-1.05)	0.206
Joint Family system	0.65(0.21-2.01)	0.450
Nuclear Family System	0.46(0.15-1.38)	0.165
Number of Earning members	0.95(0.81-1.12)	0.534
Father Working	1.28(0.65-2.55)	0.474
<b>Mother Working</b>	<b>2.81(1.44-5.49)</b>	<b>0.002*</b>
Number of Siblings	0.95(0.86-1.06)	0.351
Birth Order	0.92(0.82-1.03)	0.165

Number. of siblings who have given any entrance exam in the past	0.99(0.85-1.16)	0.908
3 - 4 sleep hours	0.79(0.24-2.53)	0.686
5 - 6 sleep hours	0.62(0.31-1.25)	0.182
7 - 8 sleep hours	0.55(0.28-1.1)	0.091
Take power Naps or day-time sleep	1.47(0.96-2.23)	0.074
10 - 30 min per day	1.34(0.63-2.85)	0.452
1 - 2 Hours per day	1.27(0.81-2.01)	0.301
3 - 4 Hours per day	1.18(0.51-2.75)	0.702
Aware of the term Stress?	1.72(0.56-5.31)	0.344
Social Media	3.5(1.02-11.99)	0.046
<b>Print Media</b>	<b>5.6(1.28-24.56)</b>	<b>0.022*</b>
<b>Digital Media</b>	<b>7.4(1.71-32.09)</b>	<b>0.008*</b>
Educational Institute	2.58(0.75-8.88)	0.133
<b>Any Seminar</b>	<b>11.4(1.74-74.65)</b>	<b>0.01*</b>
Any Other	3.6(0.93-13.95)	0.064
<b>Ever been diagnosed with stress?</b>	<b>1.88(1.17-3.03)</b>	<b>0.01*</b>
Receive any Treatment/Counseling	1.73(0.84-3.53)	0.135
<b>Anyone from your family or friend is/was suffering from Stress?</b>	<b>2.18(1.42-3.33)</b>	<b>&lt;0.01*</b>
They receiving/receive any treatment/counseling	1.61 (0.98 - 2.67)	0.06

\* $p < 0.05$  was considered statistically significant for the odds ratio

## Discussion

The purpose of this study was to evaluate the factors associated with perceived stress in students appearing for the university entrance test. The association of perceived stress (low, moderate, and high level) with different baseline characteristics (gender of students, type of education, college, family type, and father working) were not significantly ( $p > 0.05$ ) associated with, while perceived stress (low, moderate and high level) with significantly associated with working mother/mother having a job ( $p < 0.05$ ) in our study (Table 1). Like our results, Koochaki et al. also did not observe the association of stress with gender.<sup>14,15</sup> But in contrast to our study results, a study was done in the kingdom of Saudi Arabia (KSA), which showed a significant ( $p < 0.05$ ) association between perceived stress with a working father and the type of family. The type of family (nuclear or joint) plays a vital role in the development of perceived stress in students, as the nuclear family is prone to develop more stress as compared to a joint family. In a nuclear family, members are few in number, and no elders or no seniors in the home, which leads to more stress or magnification of psychological issues (depression, anxiety, and stress) and problems in student life. It was also observed that the association of perceived stress (low, moderate, and high level) did not show a significant ( $p > 0.05$ ) association with working mothers, these results are in contrast to our study findings.<sup>16</sup> The gender-based comparison showed an insignificant

( $p > 0.05$ ) association for the moderate/high level of perceived stress among students in our study results, in contrast to our results a study showed a significant association between gender-based comparison.<sup>17</sup> The Factors like working mother/mother having a job, print media, digital media, any seminar, ever been diagnosed with stress, anyone from your family or friend is/was suffering from Stress showed significant ( $p < 0.05$ ) association with perceived stress (moderate/high level) in our study (Table 2). Shah et al. also observed similar results.<sup>18,19</sup> In contrast to our results, the study was observed in Egypt.<sup>20</sup> Perceived Stress is a common problem that is faced by everyone on daily bases in his/her life but it depends upon the nature of stressors or factors that varies between individuals' condition and their environments. College students are a unique group of individuals, who are facing many stressors in academics, health-related stressors, family problems, or sleeping difficulties in this critical period of life which can lead to the development of depression, anxiety, stress, poor academic performance, and other systemic disorders or cardiovascular comorbidities.<sup>21</sup> College students are facing perceived score (academic stress), that is causing the problems like physical and mental as well as, and affecting the healthy growth of adolescents. We should evaluate the stressors or factors, which are a source of the development of psychological distress or psychological issues (depression, anxiety, and stress) in college students, as to reduce the distress burden on family and on students as well as on society too.

## Conclusion

In our study results, working mothers/mothers having jobs showed a significant association with perceived stress, due to poor emotional relationships between parents and adolescents. So parents should give time to their kids for solving psychological issues (depression, anxiety, and stress).

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