

Prevalence of stress among medical students in Jizan University, Kingdom of Saudi Arabia

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ABSTRACT

Objective: Stress and its psychological manifestations are inherent in human life and are a major source of concern in the modern day society. Medical education poses many new, challenging and potentially threatening situational demands for the students throughout the world. This cross-sectional study was conducted to determine the prevalence and the factors associated with stress among medical students at Jizan University in Kingdom of Saudi Arabia.

Materials and Methods: Fifty percent of the medical students representing all years of study in both male and female colleges participated in the study, which was conducted using the GHQ 20 questionnaire to assess the level of stress. The prevalence of stress was analyzed on the basis of gender, academic year, BMI, education level of parents, occupation of parents, place of residence, type of residence, number of siblings, and with whom the students were living. Descriptive statistics were used for summarizing the outcome variables and appropriate test procedures used to test for trend and for quantifying the outcome variables.

Results: The prevalence of stress among medical students was 71.9%, with females being more stressed (77%) than the males (64%). There was a statistically significant association between stress and gender ($p < 0.01$, odds ratio 1.89 CI 1.20 – 2.90). Parents' education level or occupation, ownership of house, type of residence, number of siblings, whether living with parents, place of residence, mode of travel to the college, time taken to reach college, marital status and epidemiological factors other than those related to academic issues were not associated with stress. Perceived sleeping problems ($p < 0.01$, odds ratio 0.289, C.I- 0.172 – 0.487) and waking time in the morning ($p < 0.05$, odds ratio 0.549, C.I -0.304 – 0.993) showed a statistically significant association with stress. The major factor associated with perceived stress was long hours of study. Examinations and very tight time schedules were the other factors identified. Psychological and family issues, lack of entertainment in the campus and the education system itself were other stressors for the medical students.

Conclusion: Stress was prevalent in approximately three fourths of the study group, with a preponderance among the females. Implementing effective changes in the curriculum to make it more student-friendly should receive priority in addressing this high prevalence of stress among medical students.

Key words: stress prevalence, stress factors, medical education, Saudi Arabia

Citation

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INTRODUCTION

Stress and its psychological manifestations are inherent in human life and are a major source of concern in the modern day society. Stress in individuals is defined as anything that disrupts the normal person's physical or mental wellbeing. It

arises due to the inability of an individual to meet the demands made on him. A mild form of stress may manifest as a bad mood while an extreme one may lead to an act of violence, burnout or suicide. As per World Health Organization, a stressor is any stimulus which evokes a stress response. Stressors may be real or imagined, and internal or external. The overall impact of a stressor will depend on its features and the characteristics of those who have been affected. The perceived

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rather than the absolute quantities of a stressor determine its potential impact.

Stress can be positive or negative. Positive stress is called eustress and negative stress distress. Eustress triggers the body alarm, and enhances attention, performance and creativity. It has temporary effects only. Distress has negative effects on the body. Stress represents the wear and tear of the body. Chronic stress can have serious effects on human health and behavior.

Medical education poses many new, challenging and potentially threatening situational demands on the incoming student throughout the world. Medical school has long been recognized as a setting that has numerous stressors that can affect the wellbeing of students. In addition to coping with stressors of everyday life, medical students must deal with stressors specific to medical school such as the new information flow and input overload, examinations, chances of failure, lack of leisure time, workload, relationships with peers and career choices. Psychological stress has long been regarded as having influence on learning and performance. There is evidence that mental distress during medical school predicts later problems in physicians, which in addition to the personal suffering experienced by the individual doctor, might negatively affect patient care¹.

The estimated prevalence of emotional disturbance reported in different studies among medical students was higher than that in the general population. In three British universities the prevalence of stress was 31.2%², while in a Malaysian medical school it was 41.9%³ and in a Thai medical school 61.4%⁴. According to a study conducted at College of Medicine, King Saud University, Riyadh, Saudi Arabia, the proportion of female students who experienced stress was higher (75.7%)⁵ than their counterpart males (57%). The prevalence of stress was the highest among the first-year students (78.7%), followed by the second-year (70.8%), third-year (68%), fourth-year (43.2%), and fifth-year students (48.3%).

Stress has been found to be associated with anxiety and depression^{6,7}, interpersonal conflict⁸, sleep problems⁹, and lower academic and clinical performance¹⁰. It was also reported to decrease attention, reduce concentration, hamper decision-making, and reduce students' abilities to establish good relationships with patients resulting in feeling

of inadequacy and dissatisfaction with clinical practice in the future. Furthermore, it was linked to medical student suicide¹¹, drug abuse^{4,12}, and use of alcohol¹³. These facts confirmed the negative association of distress with mental, emotional and physical morbidity. Such situations invariably affect patients' lives and the health of the community. Therefore, early detection and intervention may prevent and minimize the effects of distress on the students at a later date.

It is important that stress in medical students be recognized, and strategies developed to deal with it focusing on both individual and situational factors. This study was conducted to assess the prevalence of stress among medical students in Jizan University. The factors studied for possible association with stress were year of study, gender, number of siblings, BMI, parents' education level, parents' occupation, ownership of house, type of residence, whether staying with parents or not, place of residence, time of waking up in the morning, mode of travel to the college, time taken to reach college, perceived health status and marital status

MATERIALS AND METHODS

A cross-sectional study involving all the medical students at different stages of training from both male and female colleges who were present in the main campus during the study period was carried out. The students posted at other locations were excluded from the study. All students who participated in the study were informed about the objectives of the study, and the instrument used was explained by well-trained students who acted as research assistants. The students were informed that participation in the study was voluntary and that they had the choice to remain anonymous. Approval for conducting the study was obtained from the Research and Ethics committee of the Faculty of Medicine, Jizan University.

A pre-tested questionnaire was used for data collection. It consisted of two parts: the first part dealt with socio-demographic data, variables pertaining to demographic profile and personal factors such as age, gender, body weight, birth place, number of siblings, parents' education level, parents' occupation, parent income, whether staying with parents, relatives or in hostel, place of residence, distance and time to reach college, study and sleeping habits. The second part constituted

the General Health Questionnaire (GHQ 20) that assessed the chronic stress level of the participant.

One of the most widely used tools to measure stress levels is the General Health Questionnaire (GHQ 20), with the items representing manifestations of stress. Reliability coefficients of the questionnaire have ranged from 0.78 to 0.95 in various studies. Respondents were asked to rate the presence of each of the manifestations in themselves during the weeks immediately preceding, using the scale “not at all”, “no more than usual”, “rather more than usual” and “much more than usual”. The scoring method was binary scoring where the two least symptomatic answers were scored 0 and the two most symptomatic answers scored -1, i.e. 0-0-1-1. The sensitivity and specificity of the GHQ 20 score at cut-off point of 4 were 81.3% and 75.3% respectively with positive predictive value of 62.9%. Caseness was considered as a score of 4 or higher.

The general questionnaire and Stress scale GHQ 20 were translated to Arabic by one team of students and it was back translated to English by another team under the supervision of the researchers. A pilot study using the draft questionnaire was conducted before the final approval. The Arabic version of the questionnaire was used in the study.

Data were entered and analyzed using the SPSS software (version 16.0). A comprehensive score was derived from the twenty questions of stress scale (GHQ 20) as an outcome variable. Stress was categorized dichotomously as stress present/not present. Descriptive statistics (mean, standard deviation, and percentages) were used for summarizing the outcome variables. Pearson’s Chi-square test for trend and odds ratios was used for observing and quantifying the association between a categorical outcome (i.e. the stress level) and different study variables.

RESULTS

Three hundred and eighty five students participated in the study, which comprised approximately 50% of the total medical students in the university, out of whom, 181 (47%) were males and 204 (53%) females. The majority of the students [110 (28.6%)] were second years. Details are given in Table 1.

The prevalence of stress among medical students is 71.9%. Figure 1 shows that there is a

gender difference in the prevalence of stress among medical students. Female students were more stressed than the male counterparts. The prevalence of stress among the females was 77% while that among the males it was 64%. There is a statistically significant association between gender and stress (p<0.05).

The age of the students ranged from 18 to 26 years, with a mean age of 20.8 years. Even though

Table 1. Student profile

Variables	Groups	Number	%
Gender	Male	181	47.0
	Female	204	53.0
Year of study	First	58	15.1
	Second	110	28.6
	Third	70	18.2
	Fourth	98	25.5
	Fifth	49	12.7

the difference in mean age of the two groups, stressed and not stressed, was very small, the analysis shows that the difference is statistically significant. There is a strong belief that stress levels can influence the eating habits and may affect weight and Body Mass Index. The Mean weight and Mean BMI show the same trend, and both were slightly lower in the stressed group. The difference was statistically significant. There was a statistically significant association between stress and BMI (p<0.05) in the two categories, BMI below 25 and BMI above 25. The difference in mean height of the two groups was not statistically significant. Details are given in Table 2.

Twelve percent of the medical students have fewer siblings than three. The majority (73%) have four to ten siblings. Fifty students (15%) said that they had more than 10 siblings. The

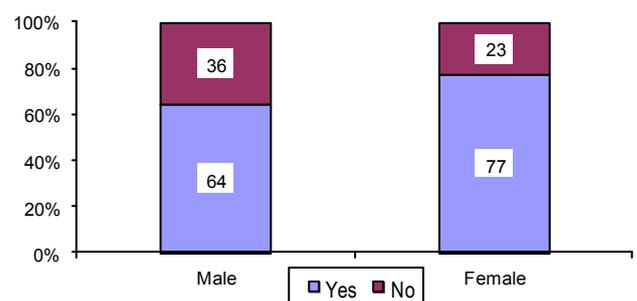


Figure 1. Stress vs. gender

maximum number of siblings reported was 37. The association observed between the number of siblings and the stress level was not statistically significant.

The majority of the students (92%) were living with their parents. There was no statistically significant difference in stress between those who lived with their parents and those who did not

Table 2. Association of stress with age, weight, height and BMI

Variables (Mean)	Total	Stress		p
		Present	Absent	
Age	20.88	20.71	21.29	<0.005
Weight	60.41	59.2	63.46	<0.05
Height	162.3	161.9	163.0	NS
BMI	23.18	22.74	24.22	<0.05

(Odds -2.086 C.I- 0.774 – 5.619). The majority (93%) was living in their own houses while the others lived in rented houses. No statistically significant association was observed between this factor (living in own house or in rented accommodation) and stress (Odds- 1.990, C.I – 0.662 – 6.074). The accommodation of the students comprised villas (50%), traditional houses (26%), and flats (18%). There was no statistically significant association between type of accommodation and the stress experienced.

The majority (48%) of the fathers had had education up to the college level. Twenty three percent had received either primary school education or were illiterate. No statistically significant association between stress of the students and the education level of the father was observed (p>0.05).

The majority of the mothers (52%) had received education up to primary school level. Twenty four per cent had received education up to the university level. There was no statistically significant association between perceived stress of the student and the education level of the mother.

Sixty two percent of the fathers were employed in the government sector. Twenty three percent had retired from service. A small proportion (15%) was employed in the private sector. There was no statistically significant association between perceived stress of the student and the occupation of the father. The occupation status of the mother, too, showed no association with stress (p>0.05, odds – 0.982, C.I – 0.585 – 1.647). Details are given in Tables 3 and 4.

Figure 2 shows the perceived causes of stress among the medical students. Long hours of study were identified as the most important cause of stress by about 23% students. Examinations and very tight time schedule were the other causes mentioned. Psychological issues, family issues, lack of entertainment in the campus and the education system itself were identified as stressors by the students.

Table 3. Factors associated with stress

Variables	Stress				p
	Present		Absent		
	No.	%	No.	%	
Siblings					
<3	32	82	7	18	NS*
4 - 10	174	70.7	72	29.3	
> 11	34	68	16	32	
Type of Residence	45	77.5	13	22.5	
Flat	112	68	52	32	NS*
Villa	105	71	43	29	
Others	105	71	43	29	
Father's education					
Up to primary	61	74.4	21	25.6	
Intermediate +High School	72	68.6	33	31.4	NS*
College	125	70.6	52	29.4	
Mother's education					
Up to primary	137	71.7	54	28.3	
Intermediate +High School	63	73.3	23	26.7	NS*
College	59	67	29	33	
Father's occupation					
Government	149	68	70	32	
Retired	61	75.3	20	24.7	NS*
Private	39	76.5	12	23.5	
Mother's occupation					
Employed	67	69.8	29	30.2	
Not. Employed	167	70.2	71	29.9	NS*
Mode of Travel					
Private Car	168	69.4	74	30.6	
Taxi car	29	72.5	11	27.5	NS*
Van/Bus	64	73.6	23	26.4	
Travel Time					
<30 min.	100	70.9	41	29.1	
31 – 60 min.	44	60.3	29	39.7	NS*
61 – 90 min.	85	76.6	26	23.4	
> 91 min	31	72.1	12	27.9	

* Not significant

Table 4: Factors associated with stress

Variables	Stress				p value	Odds ratio	C.I
	Present		Absent				
	No.	%	No.	%			
Gender							
Male	46	42.6	62	57.4	<0.01	1.89	1.20- 2.90
Female	153	58.3	109	41.7			
Staying with							
Parents	237	91	24	9	NS	2.086	0.774 - 5.619
Others	103	95	5	5			
Ownership House							
Owned	205	68.1	96	31.9	NS	1.990	0.652- 6.074
Rented	17	80	5	20			
Wake up time							
<6 am	194	73.5	70	26.5	<0.05	0.549	0.304- 0.993
> 6 am	35	60.3	23	39.7			
Sleep Problems							
Yes	149	68	70	32	<0.01	0.289	0.172- 0.487
No	61	75.3	20	24.7			
Marital status							
Married	20	80	5	20	NS	1.702	0.622- 4.656
Single	242	70.1	103	29.9			
Place of Residence							
Jizan	67	72	26	28	NS	0.947	0.561-1.601
Other	188	71	77	29			

DISCUSSION

This study conducted at Jizan University shows a high prevalence of stress among undergraduate medical students. The level of stress or depression varied between the stages of education. An interesting finding in the study was that the level of stress decreased as the students progressed in their years of study. The highest prevalence of stress was found in the second year, with 89.2%, followed by the first year with 77.2%. This may be due to the fact that first year students were taught mainly premedical subjects and English. The prevalence of stress was 76.9% among females compared to 63.7% among males. This increased level of stress indicates a decrease of psychological health in medical students which may affect students' behavior, diminish learning, and ultimately affect patient care. The overall prevalence of stress observed in this study was 71.9%, which was higher than in British (31.2%)² Malaysian (41.9%)³ and Thai (61.4%)⁴ studies.

The factors such as BMI and the gender show statistical association with stress. Factors such as the education level of the parents, father's occupation, place of residence, type of residence, the number of siblings, and with whom the students lived did not show any statistically significant association with stress.

CONCLUSION AND RECOMMENDATIONS

The major finding in the study is that the prevalence of psychological stress among medical students is alarmingly high in Jizan University. The psychosocial stress is more prevalent among the female students compared to the male students. The stress level in the initial three years of the course was higher than that in the last two years. The major cause of stress is related to the curriculum, time distribution for study and the examination system and the campus environment.

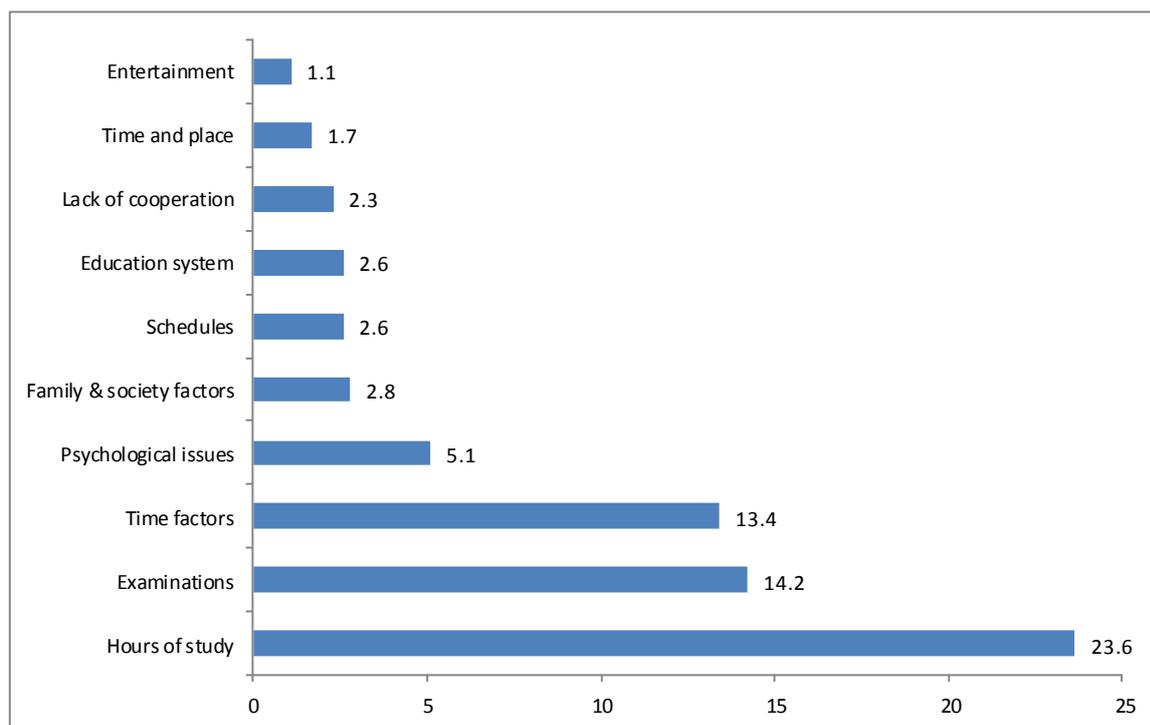


Figure 2. Perceived causes of stress

Recommendations suggested are modifying the curriculum to achieve a balance between the content and time distribution, a more student-friendly campus, teaching and assessing methods, establishing a student counseling center in the campus with qualified and experienced staff, improving the facilities for extracurricular activities in the campus to reduce psychological stress, and strengthening and activating a tutorial system in the colleges. It is also necessary to undertake further study focusing on academic issues to identify the specific factors associated with stress among medical students.

Limitations

Some of the students were absent or had been posted out of the campus and therefore were not included in the study. Others were reluctant to participate in the study and some participants did not fill the questionnaire completely and hence data from only 50% of the medical students were analyzed.

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