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Prevalence of Stress and Its Association with Body Weight among Medical Students in Umm Al Qura University, Makkah 2021

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Abstract:

Background and Objectives: Medical education is a well-known cause of stress for medical students. It can disturb their caloric intake leading to a alteration in their body weight. Aim: assess the prevalence of stress among medical students and to observe the association between the level of stress, gender, and BMI among medical students at Umm El Qura University, Makkah. **Methods:** A cross-sectional design including 200 medical students from 2nd to 6th year. A perceived stress scale-10 questionnaire used to measure the stress score. Weight and height were collected based on self-reported value. **Result:** 200 of the students agreed take an interest in the review with aage from 20-22years, female students. The prevalence of students stress was ranged from moderate to low stress While the weight mass index (BMI) has been not apparently positively correlated with stress (p=0.010). **Conclusion:** Stress is prevalent between medical school students at Umm El Qura University. Association between level of stress and obesity was not statistically significant. Preventive measures ought to be implanted to reduce the level of pressure between medical students.

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Introduction

Stress is well-defined as a condition of uncontrolled emotional changes caused by different stressors. It is characterized by nonspecific body reactions to distressing situations in the surroundings (Khalil et al., 2020). Different approaches of medical, psychological, and psychotherapy treatments to reduce stress and to practice coping skills are a major part of the process of effective contact to stress (Imankhah et al., 2019; Soh et al., 2017).

Studying medicine comprises demanding and complex theoretical and practical courses over a long duration of time that made medical education a well-known cause of stress to medical students (Soliman., 2014). Many research studies had revealed an alarmingly high prevalence rate of stress between medical school college students worldwide. Researches done in several countries express a high prevalence of stress among medical students (Soliman., 2014; Abdulghani et al., 2011; Salam et al., 2013).

Within the same context, in KSA, the prevalence rate ranged between 28% to 87% (Wahed& Hassan., 2017; Koochaki, et al., 2011) . It is well established that a high level of stress has aundesirableinfluence on both the physical and psychological wellness of medical students. It can put them at threat of mental illnesses and disturb their learning and cognitive functions (Soliman., 2014).

The associationbetween stress and body weight has been investigated for many years. People alter their caloric intake during stressful events, some engage in negative binge eating in particular of carbohydrates and saturated fats, while others cut down their caloric intake during stressful events. These factors make people respond differently to stress, some gain weight while others lose weight (Van der Valk et al., 2018; Geiker et al., 2018). Different theories are explaining the pathophysiology of stress and its effect on bodyweight, but the exact reason is not fully understood. One of the suggested theories is the effect of stress on activation of the hypothalamic-pituitary-adrenal axis (HPA-axis) (Van der Valk et al., 2018; Khalil et al., 2020).

It is essential to determine the effect of stress on medical students and how it may affect their health and professional career. As no published review was directed in Makkah, KSA to look into the association between stress and body weight among medical students.

Aim of the study

To determine the prevalence of stress among medical students and to observe the association between the level of stress, gender, GPA, and BMI among medical students of Umm Al Qura

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university.

Methodology

Study design and setting:

A cross-sectional review was conducted at the College of Medicine at Umm Al Qurauniversity, Makkah.

Study setting:

This review was conducted on medical students at Umm Al Qurauniversity, Makkah.

Study population and sampling:

A convience sample of medical students in Umm Al Qura university Makkah who were willing to participate in the study (200students)

Sample size :

The researcher has used 50%, moreover, based upon a confidence level 95% and margin of error of 5%. The sample size calculated using the Raosoft calculator be will 260 of the students approved to participate in the research.

Data collecting tools:

A stress score questionnaire (perceived stress scale-10) by Sheldon Cohen used to measure the stress level. It consists of 10 Likertlike scale questions and ranges from 0 to 4. The higher the score index, the higher the level of stress.

- ✓ Score ranging from 0-13 was considered low stress.
- ✓ Score ranging from 14-26 was considered moderate stress.
- ✓ Score ranging from 27-40 was considered high stress.

Height and weight data were collected from medical students based on their self-reported values. The Body Mass Index was calculated by using the equation weight/height (m2). Students considered underweight if BMI <18.5, normal if BMI<25, overweight if BMI ranged from 25-29.9 and obese if BMI more than or equal 30.

Data Collection technique:

The researcher has been distributed the questionnaire personally to all medical students of Umm Al Qura university. After approval from higher authorities acquired, during the working hours, specifically between the break times. A short introduction about the research and its importance was presented. The response rate was high.

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Study variables:

The variables: Body Mass index by using the equation weight/height (m2). Students considered underweight if BMI <18.5, normal if BMI<25, overweight if BMI ranged from 25-29.9 and obese if BMI more than or equal 30.

Pilot Study/Pretesting:

The questionnaire has been applied to 10% of the sample size over the medical students

Ethical considerations:

Ethical approval obtained from the scientific research ethics committee at Umm Al Qura university. Verbal informed consent was obtained from all participants after explaining to them the aim and nature of the study.Privacy and confidentiality assured as the questionnaire filled anonymously.

Data analysis:

For the data entry and statistical analysis, the statistical package for the social sciences (SPSS) version 22.0 was used. Appropriate statistical tests were used in the analysis based on the types and distribution of the study data. Categorical data were analyzed using the chi-square test while the t-test was used for numerical data. The results will be statistically significant if the P-value is <0.05.

Table 1: Distribution of socio-demographic details of (n=257) Medical Students at Umm Ai Qura University enrolled in this study:

Among 200 medical students; it was noticed that more than half of students (52%)were aged from 20-22 years with normal weight (52%), majority were females (81%) and single (96%). Approximately one third of them (30.5%) have more than 2000 SR as monthly income, distributed from the second (30%), third (28%) and fifth level (20%). Majority of them changed more after medical school (87%, 61.7%). Less than half of them (48%) had 4.5-5 GPA

Age		
<20	21	10.5
20-22	104	52.0
22-24	66	33.0
24 or more than	9	4.5
Gender		

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Female	162	81.0
Male	38	19.0
BMI		
Underweight	19	9.5
Normal weight	104	52.0
Overweight	50	25.0
Obese	27	13.5
Marital status		
Single	192	96.0
Married	5	2.5
Other	3	1.5
Income		
<5000	42	21.0
5000-10000	29	14.5
10000-15000	40	20.0
15000-20000	28	14.0
>20000	61	30.5
Educational level		
Second year	60	30.0
Third year	50	25.0
Fourth year	35	17.5
Fifth year	40	20.0
Sixth year	15	7.5
changed after starting medical school.		
Yes	174	87.0
No	26	13.0
If yes, the change was around:		
More	107	61.5
Less	66	37.9
I don’t know	1	.6
Current GPA		
<2	2	1.0

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2 – 2.74	9	4.5
2.75 – 3.74	20	10.0
3.75 – 4.49	73	36.5
4.5 – 5	96	48.0

Table 2: Description the sample characteristics stratified by stress score:

Less than half of students (46%) spend from 3 - 5 hour studying per day eating two meals per day. 75.5% of participants had snacks between meals (chips, chocolate, sweets). The majority of participants (73.2%) had 1-3 fast foods per week. The majority of participants (50.5.0%) had stimulants (tea, coffee)more than 7 times in a week. Regarding exercise, the majority of participants (89.5%) answered Yes, I play exercises. the majority of participants (83.8 %) exercised daily less than 30 minutes. Regarding smoking status, most of participants (92.5%) answered No I do not smoke. Less of half had trouble sleeping.

	N	**%**
How much time do you spend studying per day?		
Less than 1 hour	14	7.0
1 - 2 hour	32	16.0
3 - 5 hour	92	46.0
More than 5	62	31.0
The numbers of meal per day		
1 meal	15	7.5
2 meals	94	47.0
3 meals	71	35.5
More than 3	20	10.0
Frequency of snacks between meals (chips, chocolate, sweets)		
Never	2	1.0
Always	77	38.5
Sometimes	95	47.5
Rarely	26	13.0
Fast food per week		

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Never	23	11.5
1-3	146	73.0
4-7	26	13.0
More than 7	5	2.5
How often do you have stimulants (tea, coffee) in a week?		
Never	29	14.5
1-3	41	20.5
4-7	29	14.5
More than 7	101	50.5
Exercise		
Yes	179	89.5
No	21	10.5
What is the total time that you spend in exercising daily?		
Less than 30 minutes	150	83.8
30-40 minutes	18	10.1
More than 50 minutes	11	6.1
What time do you go to bed?		
8-10 pm	11	5.5
11pm-12 am	64	32.0
1-3 am	100	50.0
After 3 am	21	10.5
irregular	4	2.0
Sleeping hours per day		
3 hours or less	4	2.0
4-5 hours	67	33.5
6-7 hours	108	54.0
8 hours or more	21	10.5
Trouble falling asleep		
Yes	87	43.5
No	113	56.5

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Smoking Status		
Yes	15	7.5
No	185	92.5

Table 3 :Description of the sample characteristics stratified by Stress Scale.:

The relation between mean stress scores and sample characteristics stratified by Stress Scale was statistically significant (<0.001) in all items. The majority of participants answered "sometimes" in the stress scale.

Stress items	**Data**		**rank**	**One sample T-test (test value2)**	
	Mean	**SD**		**t**	**P-value**
How often have you been upset because of something that happened unexpectedly?	2.500	1.094	4	6.466	<0.001*
How often have you felt that you were unable to control the important things in your life?	2.655	1.132	2	8.180	<0.001*
How often have you felt nervous and "stressed"?	2.910	1.023	1	12.576	<0.001*
How often have you felt confident about your ability to handle your personal problems?	2.145	0.910	7	2.253	0.025*
How often have you felt that things were going your way?	1.985	0.877	9	-.242	0.809
How often have you found that you could not cope with all the things that you had to do?	2.370	1.053	5	4.970	<0.001*
How often have you been able to control irritations in your life?	2.080	0.859	8	1.318	0.189
How often have you felt that you were on top of things?	1.895	0.984	10	-1.509	0.133
How often have you been angered because of things that were outside of your control?	2.540	1.026	3	7.440	<0.001*
How often have you felt difficulties were piling up so high that you could not overcome them?	2.300	1.084	6	3.913	<0.001*

Table 4 and figure I: Description of the Stress Score Groups and Stress.

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Regarding the association between the stress and stress score, most of the students (66 %) had moderate stress followed by low stress (22%).

Stress		
	N	**%**
Low Stress	44	22.0
Moderate Stress	132	66.0
Severe Stress	24	12.0
Total	200	100
Range	2-38	
Mean+SD	23.380+5.786	

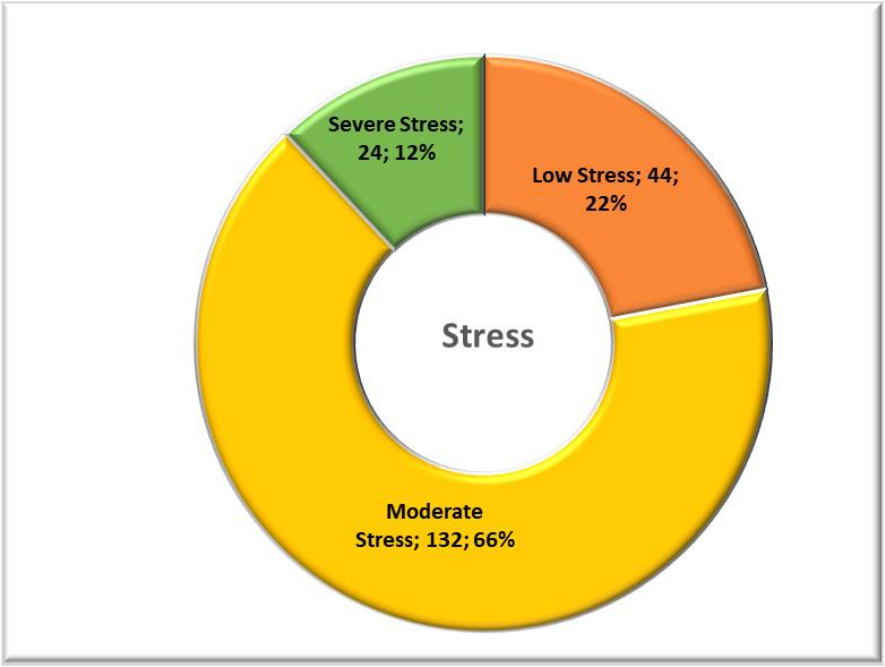

Table 5: Distribute of the relation between the stress and demographic data (age, gender, Marital status, Income, Level of education, change after starting medical school, current GPA, and time spent for studying per day).

No relation was found between the level of stress and students sociodemographic characteristics.

			Stress			Chi-square	
			Low Stress	**Moderate Stress**	**Severe Stress**	**X^2**	**P-value**
Age	**<20**	**N**	6	12	3	5.622	0.467

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		%	13.6%	9.1%	12.5%		
	20-22	**N**	20	68	16		
		%	45.5%	51.5%	66.7%		
	22-24	**N**	17	45	4		
		%	38.6%	34.1%	16.7%		
	24 or more than	**N**	1	7	1		
		%	2.3%	5.3%	4.2%		
Gender	**Female**	**N**	35	108	19	0.169	0.919
		%	79.5%	81.8%	79.2%		
	Male	**N**	9	24	5		
		%	20.5%	18.2%	20.8%		
BMI	**Underweight**	**N**	4	15	0	10.635	0.100
		%	9.1%	11.4%	0.0%		
	Normal weight	**N**	26	69	9		
		%	59.1%	52.3%	37.5%		
	Overweight	**N**	10	30	10		
		%	22.7%	22.7%	41.7%		
	Obese	**N**	4	18	5		
		%	9.1%	13.6%	20.8%		
Marital status	**Single**	**N**	44	125	23	6.335	0.176
		%	100.0%	94.7%	95.8%		
	Married	**N**	0	5	0		
		%	0.0%	3.8%	0.0%		
	Other	**N**	0	2	1		
		%	0.0%	1.5%	4.2%		
Income	**<5000**	**N**	9	26	7	3.710	0.882
		%	20.5%	19.7%	29.2%		
	5000-10000	**N**	6	19	4		
		%	13.6%	14.4%	16.7%		
	10000-15000	**N**	10	25	5		
		%	22.7%	18.9%	20.8%		
	15000-20000	**N**	4	22	2		

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		%	9.1%	16.7%	8.3%		
	>20000	**N**	15	40	6		
		%	34.1%	30.3%	25.0%		
Current GPA	**<2**	**N**	1	1	0	7.092	0.527
		%	2.3%	.8%	0.0%		
	2 – 2.74	**N**	2	7	0		
		%	4.5%	5.3%	0.0%		
	2.75 – 3.74	**N**	3	14	3		
		%	6.8%	10.6%	12.5%		
	3.75 – 4.49	**N**	21	44	8		
		%	47.7%	33.3%	33.3%		
	4.5 – 5	**N**	17	66	13		
		%	38.6%	50.0%	54.2%		

Discussion:

This study was conducted to assess the prevalence of stress among medical students and to observe its association with body weight. Both stress and unhealthy body weight can cause major psychological and physical health issues that will have bad impacts on students (Abdulghani et al., 2011). This study showed that the majority of students were ranged from moderate to low level of stress with no significant association among BMI and stress (P-value =0.010), which is not in agreement with other studies done in Jizan, KSA (P-value= 0.001) (Sani et al., 2012) and Egypt (P-value =0.001) (Wahed et al., 2017).

Most of the students were female. As they physiologically liable for hormonal fluctuation that may affect their mood stability and coping with stress. The perceived prevalence of stressed students ranged from moderate to low. Within this context, the prevalence of stress in this study was lower than the ones from Malaysia (48.6%) (Salam et al., 2015), Dammam (71.7%) (Al Sunni & Latif., 2014), Jizan (71.9), and United Kingdom (31.2%) (Sani et al., 2012)but higher than a Swedish study (12.9%) (Al Sunni & Latif., 2014).

A prior study done in Taibah university recommended the continuous supervision of students by their academic supervisors and to dissolve any barriers between the students and staff by strengthening the bonds and trust between them and minimize the stressful environment at the college of medicine (Habeeb., 2010).

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This study a significant association between the sample characteristics stratified and stress scale with P-value <0.001). Regarding the association among the stress and stress score, most of the students have moderate to low level of stress. The average stress score was higher in femalesthan males. This discrepancy between male and female students could be attributed to many factors besides their psychological and physiological differences; lesser recreational activities compared to the male students. This is similar to a study done in Jizan University reported that the prevalence of stress was higher among females (76.9%) than males (63.7%) (Sani et al., 2012). There is no significant association between GPA and stress level, which is similar to findings from other universities in Saudi Arabia and Pakistan (Alsalhi et al., 2018).

It was noticed that less than half of students have a troubles in sleep. This issue must be recommended for further research in order to limit the negative impact of disturbed sleeping on the medical students' achievement.

Conclusion

In this study, we found that the prevalence of stress in Umm El Qura University was less than in other universities with no significant difference between males and females. There was a limited association between BMI and stress. It is recommended to reduce the stress level among the student by implementing different preventive strategies.

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