

Prevalence of Stress and its Association with Body Weight among Medical Students in Umm Al-Qura University Students in Makkah Al-Mukarramah 2022

Ahdab Musaad Allihyani¹, Bashayr Hassan Tahiri², Nouf Abdullah Ayidh Alotaibi³, Jawzaaa Abdullah Ayidh Al Otaibi⁴, Majeda Hameed Almasoodi⁵, Khalid Ali Alsubhi⁶, Obedullah Saud Misfer Algethami⁷, Ahmed Rajab Alzahrani⁸, Azoof Shannan Almalki⁹, Nada Adnan Nassir Alreheily⁹, Afnan Othman Hawsawi¹⁰, Majed Mohammed Al-Zahrani¹¹, Ahmed Saeed babonji¹², Khoulood Nohmmad Khuzaee¹³, Enshrah M. A. Altkrowni¹⁴

¹Internal medicine, Al-Zaher Hospital, Makkah, Saudi Arabia.

²Family Medicine Specialist, Al-Takhasosi PH, Makkah, Saudi Arabia.

³Nursing technician, Makkah AL-Mukarramah sharia, Hired Health center, Saudi Arabia.

⁴Nursing technician, Makkah AL-Mukarramah sharia ALQubaiya Health Center, Saudi Arabia.

⁵Clinical nursing director, King Abdullaziz Hospital, Makkah AlMukarramah, Saudi Arabia.

⁶Nursing Technician, Hadda PHC Makkah, Saudi Arabia

⁷Hospital management specialist, Health Affairs in Makkah Al-Mukarramah

⁸Public Health Specialist, Makkah cluster, Saudi Arabia.

⁹Nurse specialist, Heraa general Hospital, Makkah, Saudi Arabia.

¹⁰Nursing technician, Public Health, Ministry of Health, Makkah, Saudi Arabia.

¹¹Social worker, Public Health, Makkah, Saudi Arabia.

¹²dentist, jarwal center, Makkah, Saudi Arabia.

¹³Nursing technician, Al-Mansour Health Center, Makkah, Saudi Arabia.

¹⁴Technical, Reports Center 937, Saudi Arabia.

Abstract

Background

The global obesity pandemic is a major health problem with adverse effects on physical and mental health. Obesity is widely regarded as a major global pandemic; it is associated with numerous comorbidities such as increased cardiovascular diseases, diabetes and stress. Obesity has debilitating effects on both physical and mental health, finally, it leads to lower life expectancy, fast-food culture is an uprising trend among the younger age groups. Stressful life due to increased study load, staying away from home, peculiar working hours, etc., negatively influences the food choices of medical students. Hence, however, more knowledge is needed about the prevalence of stress and its association with body weight among medical students. Body weight and other favorable impacts also must be examined. The relationship between the diet, stress, and metabolic markers in individuals with obesity, the prevalence, pattern, and preferences of fast-food consumption and quality of life. The prevalence of obesity [index (BMI) over 30 kg/m²] has been increasing globally among different age groups and among young people, and more than 1.9 billion adults, 18 years and older, were overweight and of these over 650 million were obese. **Aim of the study:** To assess the prevalence of stress and its association with body weight among medical students in Umm Al-Qura University students in Makkah Al-Mukarramah 2022. **Method:** Cross-sectional analytical study has been conducted among medical students in Umm Al-Qura University students in Makkah city, that included medical students in Umm Al-Qura University students during data collection period 2022. The perceived stress scale-10

questionnaire used to measure the stress score. Weight and height were collected based on self-reported value. the total sample has been (300) medical students . **Result:** Regarding The association between the stress and stress score most of the participant average Stress were constitutes (71.33%) followed by weak stress the were constitutes (22.67%) but high were (6.0%) while a significant relation were (P-value =0.001)and X^2 (207.44) ,the Range(9-46) (Mean \pm SD (28.480 \pm 6.087). **Conclusion:** There is a need to develop interventions to improve dietary behaviors, management stress among medical students and access to sports facilities by health-promoting activities and the provision of associated with higher stress perception levels from the of medical school, these findings offer medical schools insights into fulfilling their responsibility to take care of their students' well-being.

Key words: Stress, Prevalence, Body mass index, medical, students, Saudi Arabia.

Introduction

Background

Obesity is a problem for all groups of Saudi people, especially in the age of 18 years and in the medical students also. Studies exploring weight-change events have found that is a Saudi Arabia predictor , with Saudi people gaining more weight also be affected of most socioeconomic and age groups.[1]

National nutrition and health survey data profile the weight differentials between Saudi people and other groups of women,[2,3] but few studies examine reasons for the differentials. Saudi people are less likely to diet to lose weight and less likely to exercise. [4,5] . Additionally, Saudi Arabia people than perceive themselves as overweight,[6] do not feel it is necessary to be slim to be attractive,14416 and due to certain cultural and lifestyle factors, do not have the same concerns about diet and weight management.[7]

Stress is negatively associated with short-term and long-term well-being [8]. Estimates show that one quarter to one-third of medical students show depression symptoms [9], and roughly 40% of medical students show burn-out symptoms [10]. Due to this high prevalence of mental distress, associations between the characteristics of medical schools and medical students on one side and the well-being of students on the other have been the subject of a growing body of research [11]

An example of a medical school characteristic associated with student well-being is assessment. Assessment in itself [12] and, more specifically, assessment policies with higher performance standards have been shown to increase stress perception levels [13]. By contrast, pass/ fail grading can impact the well-being of medical students positively compared to grading with three or more intervals [14]. Examples of medical student characteristics associated with well-being are gender and academic performance. Both female students and lower-performing students show higher levels of psychological distress compared to their male or well-performing peers, respectively [15]

The association between 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 [16]. There are different theories explaining the

pathophysiology of stress and its effect on body weight, but the exact reason is not fully understood. One of the suggested theories is the effect of stress on activation of hypothalamic-pituitary-adrenal axis (HPA-axis) [17]. Most mental health problems appear by early adulthood, yet young adults rarely get any support for their mental health [18]. Furthermore, mental health issues in this population are associated with higher incidence of physical and emotional problems in the mid to long term [19], labor market marginalization [20], worse quality of sleep [21] and dysfunctional relationships [22], among others. College students are at risk of experiencing stress, anxiety and depression, which cause psychological distress and may impact on their academic performance [23]. Worldwide, it is estimated that 12–50% of college students present at least one diagnostic criterion for one or more mental disorders [24]. Causes of stress during college life include academic pressure stemming from factors such as exams and workload, lack of leisure time, competition, concerns about not meeting parents' expectations, establishing new personal relationships and moving to a strange location [25]; biological factors such as age and gender, specifically being female [26]; and financial burden [27]

Literature Review

Globally, studies conducted on deferent samples of undergraduate students have identified a moderate to high prevalence of depression, anxiety and stress in this population [28]. Early diagnosis and management of psychological distress lead to better management and patient outcomes. Thus, it is necessary to identify those students who are at a higher risk of developing mental health problems during college life.[24]

Mahroon et al 2018, found that a significant prevalence of symptoms of stress (34.5%), anxiety (23.6%) and depression (18.4%) in population. Previous studies carried out in Spain involving smaller samples have reported an even greater prevalence of psychological distress in population [28]. Specifically, Mahroon et al. [28]

Studies in different parts of Iran have reported overall prevalence of overweight (16.34%) and obesity (3.04%) [22]. Also, in another study has been reported that the prevalence of obesity and overweight was 3.5% and 16.6%, respectively, that the prevalence of stress and its association with Body Weight Among health care worker was similar to other study's; however, the prevalence of overweight was highest.

In the Rahimi Bashar and Motahari study on the other city of Iran, the prevalence of obesity association stress with Body Weight Among health care worker overweight among the 370 nurses females was 20.8% and 3.4% [29]. In Thai study reported the prevalence of highly stressed students in is 36.2% and that of very highly stressed students is 39.1%. For simplicity, if we combine highly and very highly stressed level as stressed and average and low level as non-stressed students, then overall prevalence of stress will be 75.3% in the study, which is higher (61.4%), also similar a study in Egypt (43.7%),[30] or a Malaysian study (41.9%) (4), and a British study (31.2%).[21]This could be either due to the different instruments used in other studies or it could be a real difference.

Reported a prevalence of anxiety and depression of 41.7% and 6.55% respectively using the Goldberg Anxiety and Depression Scale . Fernández et al. [31] identified an even higher percentage of students with anxiety symptoms (44.7%) and a lower prevalence of depressive

symptoms (23.5%) using the Hospital Anxiety and Depression Scale (HADS). Unfortunately, the use of deferent screening tools does limit the comparability of the findings.

In Spain, mental health problems are highly prevalent in the general population, as well as in specific groups [32]. However, little is known about the mental health of college students. Previous studies have reported a high prevalence of anxiety and depression in this population [26], but sample size was small and they did not measure stress. Furthermore, since psychological health status was not the main research variable, predictive factors were not reported. Based on the above, we aim to determine the prevalence of anxiety, depression and stress, and their associated factors in a sample of Spanish college students.

Both stress and an unhealthy body weight can cause major psychological and physical health issues that will have bad impacts on health care worker in Primary Health Care . Other studies done in Jizan, KSA (p-value= 0.001) and Egypt (p-value =0.001) . A prior study done in Taibah university recommended a 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 . [31]. The current research paper focuses on obesity in Saudi Arabia, which has now one of the highest obesity and overweight prevalence rates and association with stress [19].

Rationale

Defines fast-food as “easily prepared processed food served in snack bars and restaurants as a quick meal or to be taken away.” It includes sandwiches, burgers, fried chicken, pizza, and French fries. Fast foods are rich in calories, saturated fat, trans fat, carbohydrates, and sodium and, at the same time, poor inessential nutrients, and dietary fibers. Recent studies have associated such dietary habits with the increasing stress trends of no communicable diseases such as Type 2 diabetes mellitus, hypertension, obesity, syndrome X, and cardiovascular diseases, these higher stress perception levels are associated with non-optimal academic performance. However, even when controlling for academic performance, students selected by lottery still showed higher stress perception levels. To secure student well-being and, at the same time, not harm student diversity, more research is needed to determine why students selected by assessment and lottery have higher stress perception levels than those selected by high grades.

Aim of the study

To assessment the prevalence of stress and its association with body weight among medical students in Umm Al-Qura University students in Makkah Al-Mukarramah 2022.

Objectives :

The current study to assessment the prevalence of stress and its association with body weight among medical students in Umm Al-Qura University students in Makkah Al-Mukarramah 2022.

Methodology

Study design and setting:

A cross sectional study was conducted at Umm Al-Qura University students in Makkah Al-Mukarramah 2022.

Study setting:

This study was conducted at Umm Al-Qura University students in Makkah Al-Mukarramah 2022.

Study population and sampling:

The study has been carried out in the city of Makkah in Umm Al-Qura University students in Makkah Al-Mukarramah 2022. Makkah is the holiest spot on Earth. It is the birthplace of the Prophet Mohammad and the principal place of the pilgrims to perform Umrah and Hajj. It is located in the western area in Kingdom of Saudi Arabia and called the Holy Capital. Contains a population around 2 million. This study was conducted in Umm Al-Qura University students in Makkah Al-Mukarramah at Saudi Arabia, and it reflects a diversified demographic profile with a considerable portion of the population comes from rural descent, while others come from an urban one. This difference translates into biological, socioeconomic and lifestyle differences in the Makkah population.

Inclusions and Exclusions criteria:

Inclusion: Umm Al-Qura University students in Makkah Al-Mukarramah .

Exclusion criteria : There are no exclusion criteria.

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 has been 300 of the agreed to participate in the study.

Sampling technique:

The researcher has used simple randomization between all Umm Al-Qura University students in Makkah Al-Mukarramah to participate in the study .

Has been contacted during the study duration between the students agreed to participate in the study to cover the sample size.

2.7 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 considered low stress.
- Score ranging from 14-26 considered moderate stress.
- Score ranging from 27-40 considered high stress.

Height and weight data were collected from participant based on their self-reported values. The Body Mass index was calculated by using the equation $\text{weight} / \text{height}^2 (\text{m}^2)$. Participants 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 analysis:

For the data entry and statistical analysis, the statistical package for the social sciences (SPSS) version 24.0 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 chi square.

test while t-test was used for numerical data. The results will be statistically significant if the P value is <0.05.

Data Collection technique:

The researcher has been distributed the questionnaire personally to all Umm Al-Qura University students. After approval from higher authorities acquired, during the working hours, specifically between the break time , where a short introduction about the research and its importance were presented. The response rate was high .

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.

Data entry and analysis :

The researcher has used the statistical program for social sciences SPSS software 24.0 for data entry and analysis. Necessary statistical tests such as Chi- square T-test and other appropriate tests had been used, p- value of less than 0.05 has been adopted for statistical significance.

Pilot study / pretesting :

The questionnaire has been applied to 10% of the sample size over Umm Al-Qura University students

Ethical considerations:

Permission from the Makkah joint program Family Medicine program has be obtained. Permission from the Directorate of Umm Al-Qura University, verbal consents from all participants in the questionnaire were obtained. All information was kept confidential, and results has be submitted to the department as feedback

10. Budget: Self-funded

3. Result

Table (1) : Distribution of socio-demographic details participant Medical Students were enrolled in this study

	N	%
Age		
<25	51	17
25-35	105	35
35-45	66	22
>45	78	26
Gender		
Female	177	59
Male	123	41
Marital status		
Single	39	13
Married	219	73
Other	42	14
Education level		
Preparatory level	45	15

Second to Third year	99	33
Fourth to Fifth year	105	35
Sixth year	51	17
Weight changed while studying in medical school		
Gained	93	31
No changes	150	50
didn't know	57	19
Residence		
Hostels (medical)	153	51
Family accommodation	147	49
Nationality		
Saudi	267	89
Non -Saudi	33	11
Income		
<5000	27	9
5000-10000	81	27
10000-15000	45	15
>15000	147	49
Physical activity (min/week)		
≥ 60	93	31
≥ 120	87	29
I don't Physical activity	120	40
BMI		
Underweight	51	17
Normal weight	114	38
Overweight	66	22
Obese	69	23

Regarding the age majority of the study groups were in the age range of (25-35) years were (35.0%) followed by age range of (>45) were (26.0%) while 35-45 years were (22.0%) , regarding the gender many of the respondents were female (59.0%) while male were (41.0%), regarding the Marital status, the majority of the respondents were married status were (73.0%) while other were (14.0%), regarding the education level the majority of them in Fourth to Fifth year were (35.0%) while Second to Third year were (33.0%) followed by sixth year were (17.0%) but the preparatory level were (15.0%), regarding weight changed while studying in medical school the majority of the respondents No changes were (50.0%) while in gained were (31.0%) but didn't know were (19.0%), regarding the residence the majority of the respondents in hostels (medical) were (51.0%) while family accommodation were (49.0%) , regarding the nationality the majority of the respondents Saudi were (89.0%) while in Non- Saudi were (11.0%), regarding the income The majority of them had an income more than (>15000SR) were (49.0%) followed by 5000-10000 were (27.0%) but 10000-15000 were (15.0%), regarding the physical activity (min/week) the majority of the respondents I don't Physical activity were (40.0%) while ≥ 60 were (31.0%) but the ≥ 120

were (29.0%), regarding the BMI the majority of the respondents in normal weight were (38.0%) while Obese were (23.0%) but overweight were (22.0%)

Table (2) Description of Stress groups according to the stress score .

	N	%
Changed after starting medical school.		
Yes	231	77
No	69	23
If yes, the change was around:		
More	156	52
Less	99	33
I don't know	45	15
Current GPA		
<2	30	10
2 – 2.74	36	12
2.75 – 3.74	57	19
3.75 – 4.49	129	43
4.5 – 5	78	26
How much time do you spend studying per day?		
Less than 1 hour	39	13
1 - 2 hour	84	28
3 - 5 hour	87	29
More than 5	90	30
The numbers of meal per day		
1 meal	51	17
2 meals	66	22
3 meals	117	39
More than 3	66	22
Frequency of snacks between meals (chips, chocolate, sweets)		
Never	51	17
Always	87	29
Sometimes	96	32
Rarely	66	22
Fast food per week		
Never	45	15
1-3.	186	62
4-7.	51	17
More than 7	18	6
How often do you have stimulants (tea, coffee) in a week?		
Never	54	18
1-3.	87	29
4-7.	90	30
More than 7	69	23

Table 2 show that description of Stress groups according to the stress score , regarding the Changed after starting working the majority of participant answer yes were (77.0%) while followed by No changed were constitutes (23.0%) according to answer yes the change was around most of study answer more were (52.0%) while answer less were (33.0%) followed by I don't know constitutes (15.0%) , regarding the Current GPA the majority of participant between the (3.75 – 4.49) were constitutes (43.0%) followed by between the (4.5 – 5) were constitutes (26.0%) while participant (2.75 – 3.74) were constitutes (19.0%) , regarding the how much time do you spend studying per day the majority of participant more than 5 hour were constitutes (30.0%) followed by 3 – 5 hour were constitutes (29.0%) while (1 -2 hour) were constitutes (28.0%) , regarding the numbers of meal per day the majority of participant between the (3 meals) were constitutes (32.0%) followed by (2 meals) were constitutes (22.0%) while (more than meal) were constitutes (22.0%) , regarding the frequency of snacks between meals (chips, chocolate, sweets) the majority of participant between the sometimes were constitutes (32.0%) followed by always were constitutes (29.0%) while rarely were constitutes (22.0%) but never were (17.0%), regarding The fast food per week the majority of participant between the (1-3) were constitutes (62.0%) followed by between the(4-7) were constitutes (17.0%) while never were constitutes (15.0%), regarding how often do you have stimulants (tea, coffee) in a week the majority of participant more than 4-7 were constitutes (30.0%) followed by between the(1-3) were constitutes (29.0%) while more than 7 were (23.0%) but the never were constitutes (18.0%) .

Table (3) Description the sample characteristics stratified by stress score

	N	%
Exercise		
Yes	246	82
No	54	18
What is the total time that you spend in exercising daily?		
Less than 30 minutes	216	72
30-40 minutes	54	18
More than 50 minutes	30	10
What time do you go to bed?		
8-10 pm	27	9
11pm-12 am	105	35
1-3 am	132	44
After 3 am	27	9
irregular	36	12
Sleeping hours per day		
3 hours or less	27	9
4-5 hours	84	28
6-7 hours	99	33
8 hours or more	90	30
Trouble falling asleep		

Yes	147	49
No	153	51
Smoking Status		
Yes	45	15
No	255	85
How often do you smoke daily		
Up to 3 cigarettes	9	3
3-10 cigarettes	147	49
1 package or more	144	48
You have been smoking for:		
Less than 1 year	60	20
1 - 2 years	147	49
More than 2 years	93	31
Type of smoking		
Tobacco cigarettes	198	66
Electronic cigarettes (Vaping)	75	25
Shesha	27	9

Table 3 show that description the sample characteristics stratified by stress score regarding exercise the majority of participant answer Yes play exercises were constitutes (82.0%) while followed answer No exercises were constitutes (18.0%), regarding the total time that you spend in exercising daily the majority of participant answer less than 30 minutes were constitutes (72.0 %) while followed by answer 30-40 minutes were constitutes (18.0%) while more than 50 minutes were constitutes (10.0%) , regarding time do you go to bed the majority of participant answer (1-3 am) were constitutes (44.0%) while followed by answer (11pm-12 am) were constitutes (35.0%) while irregular were constitutes (12.0%) but the 8-10Pm and after 3 am were respectively (9.0%), regarding sleeping hours per day the majority of participant answer (6-7 hours) were constitutes (33.0%) while followed by answer (8 hours or more) were constitutes (30.0%) while (4-5 hours) were constitutes (28.0%) but the 3 hours or less were (9.0%), regarding Trouble falling asleep the majority of participant answer No I do not have Trouble sleep were constitutes (51.0%) while followed by answer Yes I have Trouble in the sleep were constitutes (49.0%), regarding smoking Status the majority of participant answer No I do not smoky were constitutes (85.0%) while followed by answer Yes I smoky were constitutes (15.0%), regarding how often do you smoke daily the majority of participant answer (3-10) cigarettes were constitutes (49.0%) while followed by answer 1 package or more were constitutes (48.0%) while answer Up to 3 cigarettes were constitutes (3.0%), regarding since when did you smoke the majority of participant answer (1 - 2 years) were constitutes (49.0%) while followed by answer more than (2 years)were constitutes (31.0%) while answer less than(1 year) were constitutes (20.0%), regarding Type of smoking the majority of participant answer Tobacco cigarettes were constitutes (66.0%) while followed by answer Electronic cigarettes (Vaping) were constitutes (25.0%) while answer Shesha were constitutes (9.0%) .

Table (4) Description of the Stress Score Groups and Stress

Stress					
		N	%	Score	
				Range	Mean±SD
Weak		68	22.67	9-46.	28.480±6.087
Average		214	71.33		
High		18	6.00		
Total		300	100.00		
Chi-square	X ²	207.44			
	P-value	<0.001*			

Regarding The association between the stress and stress score most of the participant average Stress were constitutes (71.33%) followed by weak stress the were constitutes (22.67%) but high were (6.0%) while a significant relation were (P-value =0.001)and X² (207.44) ,the Range(9-46) (Mean ± SD (28.480±6.087)

Figure (1) Description of the Stress Score Groups and Stress

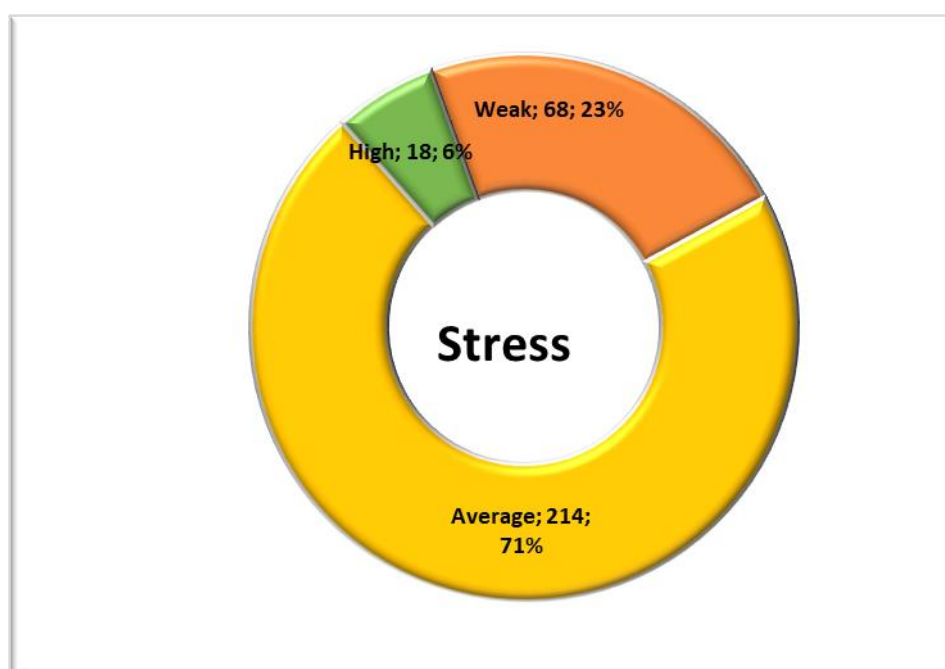


Table (5) Distribution of the relationship of the socio-demographic and stress level

		N	Stress			F or T	ANOVA or T-test	
			Mean	±	SD		test value	P-value
Age	<25	51	28.569	±	4.478	F	131.029	<0.001*
	25-35	105	34.267	±	3.854			

	35-45	66	25.515	±	4.130			
	>45	78	23.141	±	3.786			
Gender	Female	177	29.068	±	4.286	T	1.826	0.070
	Male	123	27.634	±	7.943			
Marital status	Single	39	24.923	±	3.586	F	48.336	<0.001*
	Married	219	30.269	±	5.763			
	Other	42	22.452	±	3.915			
Education level	Preparatory level	45	27.000	±	5.068	F	62.011	<0.001*
	Second to Third year	99	33.222	±	5.783			
	Fourth to Fifth year	105	27.581	±	4.278			
	Sixth year	51	22.431	±	3.139			
Weight changed while studying in medical school	Gained	93	25.484	±	2.921	F	41.866	<0.001*
	No changes	150	31.327	±	6.408			
	didn't know	57	25.877	±	5.571			
Residence	Hostels (medical)	153	30.203	±	7.007	T	5.215	<0.001*
	Family accommodation	147	26.687	±	4.292			
Nationality	Saudi	267	27.689	±	5.854	T	-6.879	<0.001*
	Non -Saudi	33	34.879	±	3.731			
BMI	Underweight	51	31.588	±	5.456	F	100.572	<0.001*
	Normal weight	114	23.061	±	4.740			
	Overweight	66	30.667	±	1.244			
	Obese	69	33.043	±	4.470			

Table (5) show that is a significant relation between stress with demographic data regarding age heave significant relation were P-value=0.001, while F=131.029 increase in 25-35 years (Mean± SD 34.267± 3.854) followed by < 25 years (Mean± SD 28.569 ± 4.478) while 35-45 years were (Mean± SD 25.515± 4.130) but >45 were (Mean± SD 23.141±3.786) , regarding gender heave significant relation were P-value=0.070, while T=1.826 increase in female (Mean± SD 29.068 ± 4.286) followed by male (Mean± SD 27.634±7.943), regarding marital status heave significant relation were P-value=0.001, while F= 48.336 increase in married (Mean± SD 30.269±5.763) followed by single (Mean± SD 24.923 ± 3.586) while other were (Mean± SD 22.452 ± 3.915) , regarding education level heave significant relation were P-value=0.001, while F=62.011 increase in second to third year (Mean± SD 33.222 ±5.783) while fourth to fifth year were (Mean± SD 27.581 ± 4.278) followed by preparatory level (Mean± SD 27.000 ± 5.068) but sixth year were (Mean± SD 22.431± 3.139) , regarding

weight changed while studying in medical school have significant relation were $P\text{-value}=0.001$, while $F=41.866$ increase in No changes (Mean \pm SD 31.327 \pm 6.408) followed by didn't know (Mean \pm SD 25.877 \pm 5.571) but gained (Mean \pm SD 25.484 \pm 2.921), regarding residence have significant relation were $P\text{-value}=0.001$, while $T= 5.215$ increase in Hostels (medical) (Mean \pm SD 30.203 \pm 7.007) followed by family accommodation (Mean \pm SD 26.687 \pm 4.292) , regarding nationality have significant relation were $P\text{-value}=0.001$, while $T=-6.879$ increase in Non -Saudi (Mean \pm SD 34.879 \pm 3.731) while Saudi were (Mean \pm SD 27.689 \pm 5.854) , regarding BMI have significant relation were $P\text{-value}=0.001$, while $F=100.572$ increase in Obese (Mean \pm SD 33.043 \pm 4.470) followed by Underweight (Mean \pm SD 31.588 \pm 5.456) but Overweight (Mean \pm SD 30.667 \pm 1.244) but Normal weight (Mean \pm SD 23.061 \pm 4.740)

Discussion

This, to our knowledge, is the first report of the prevalence of symptoms of stress, and their associated with body weight among medical students in Umm Al-Qura University in Makkah in a sample. Although the perceived stress scale-10 questionnaire cannot be considered as a tool for the diagnosis of psychological pathology, it is useful to identify the prevalence of symptoms of stress. This study was conducted to assess To assessment the prevalence of stress and its association with body weight among medical students in Umm Al-Qura University students in Makkah Al-Mukarramah 2022 .

Both stress and an unhealthy body weight can cause major psychological and physical health issues that will have bad impacts on students , this study showed a significant association between BMI and stress ($p\text{ value}=0.001$) which is in agreement to other studies done in Jizan, KSA ($p\text{-value}= 0.001$) and Egypt ($p\text{-value} =0.001$) [31]. Most of the respondents were age groups were in the age range of (25-35) years were (35.0%) , gender many of the respondents were female (59.0%), marital status, married status were (73.0%), education level the majority of them in Fourth to Fifth year were (35.0%), weight changed while studying in medical school the majority of the respondents No changes were (50.0%), nationality the majority of the respondents Saudi were (89.0%), the BMI the majority of the respondents in normal weight were (38.0%) while Obese were (23.0%) but overweight were (22.0%) (See Table 1)

Worldwide, there is variation in the reported prevalence of psychological distress among college students. A systematic review of 24 studies estimated an average prevalence of depression of 30.5%, with results ranging between 10.4 and 80.5% [33]

The same level of variation was observed in previous studies which used the questionnaire to assess psychological distress. This may be explained by differences in the selection criteria, as well the presence of confounding factors such as the influence of the environment on the mental health of our participants, modulating both the individual's subjective perception and the expression of symptoms of psychological discomfort. That is, it is possible that external factors including the participants' geographical location as well as their sociocultural context can significantly affect the prevalence of psychological distress in this population.

Of our participants, 37.4% presented symptoms of two or more psychological disorders. This association has been previously described both in the general population [29], as well as in college students [11]. In fact, suggest that there is a bidirectional, systematic pattern between

the development of depressive and anxious syndromes in young adults. In addition, previous studies [24] have identified similarities in the neurobiology and genetic structure of depression and anxiety. Another possible explanation for the association between stress is the fact that they share a significant number of risk factors and symptoms. Nevertheless, the reason for the association between these psychological syndromes is yet to be established. (See table 2,3)

The prevalence of stress in this study is lower than the ones from Malaysia (48.6%) [34]Dammam (71.7%) , Jizan (71.9), and United Kingdom (31.2%) [31], but higher than Swedish study (12.9%) In 2014, the College of Medicine at Taibah University started a new curriculum that implemented these recommendations which might have helped in decreasing the stress among medical students. Regarding The association between the stress and stress score most of the participant average Stress were constitutes (71.33%) followed by weak stress the were constitutes (22.67%) but high were (6.0%) while a significant relation were (P-value =0.001)and X² (207.44) ,the Range(9-46) (Mean \pm SD (28.480 \pm 6.087))(See table 4,5), which is similar to findings from other universities in Saudi Arabia and Pakistan [16].

Conclusion

We found a considerable prevalence of symptoms of stress in our students which, in some cases, do not occur in isolation, but coexist. In addition, we identified a number of factors associated with these symptoms. Factors including age, gender, self-esteem, sleep quality and living arrangements of college students, as well as specific behaviors relating to tobacco and Internet use seem to be strongly associated with psychological distress in the college student population. We argue that our results can be helpful to design strategies for the early identification of mental health disorders, as well as psychological and other interventions leading to mental health promotion and wellbeing in the population of college students. We can conclude that prevalence rate of stress is very high among the medical students but without any significant difference between male and female. The prevalence rate of obese and overweight is not very high but there is a strong correlation between stress and BMI. Obesity is regarded as one of the most common health issue in different parts of the world. In Saudi Arabia, there is an increasing trend in the prevalence of obesity and overweight, which are also the sources of various diseases including hypertension, diabetes, obstructive sleep apnea, CVD etc.

References

- [1] Alowfi, A., Binladen, S., Iqsoos, S., Khashoggi, A., Khan, M. A., & Calacattawi, R. (2021). Metabolic syndrome: Prevalence and risk factors among adolescent female intermediate and secondary students in Saudi Arabia. *International Journal of Environmental Research and Public Health*, 18(4), 2142.
- [2] Haq, S. M., Hassan, M., Jan, H. A., Al-Ghamdi, A. A., Ahmad, K., & Abbasi, A. M. (2022). Traditions for future cross-national food security—Food and foraging practices among different native communities in the Western Himalayas. *Biology*, 11(3), 455.
- [3] Alhazmi, A., Aziz, F., & Hawash, M. M. (2021). Association of BMI, physical activity with academic performance among female students of Health Colleges of

- King Khalid University, Saudi Arabia. *International Journal of Environmental Research and Public Health*, 18(20), 10912.
- [4] Melisse, B., Blankers, M., de Beurs, E., & van Furth, E. F. (2022). Correlates of eating disorder pathology in Saudi Arabia: BMI and body dissatisfaction. *Journal of eating disorders*, 10(1), 126.
- [5] Alghadir, A. H., Iqbal, Z. A., & A. Gabr, S. (2021). The relationships of watching television, computer use, physical activity, and food preferences to body mass index: gender and nativity differences among adolescents in Saudi Arabia. *International Journal of Environmental Research and Public Health*, 18(18), 9915.
- [6] Alshahrani, M. M., Al-Masoudi, M., Alshahrani, E. M., Alshahrani, A. M., Alshehri, K. M., Asiri, S. A., ... & Alabdali, A. H. (2021). Association between obesity and mental disorders among male secondary school students in Abha, Kingdom of Saudi Arabia: a predictor based cross-sectional study. *Middle East Journal of Family Medicine*, 19(10).
- [7] Wood, S. A., Kelly, L., Bouma-Gregson, K., Humbert, J. F., Laughinghouse IV, H. D., Lazorchak, J., ... & Davis, T. W. (2020). Toxic benthic freshwater cyanobacterial proliferations: Challenges and solutions for enhancing knowledge and improving monitoring and mitigation. *Freshwater Biology*, 65(10), 1824.
- [8] Almughamisi, M. (2021). *The co-development of a school-based nutrition intervention to prevent childhood obesity in Jeddah, Saudi Arabia* (Doctoral dissertation, King's College London).
- [9] Mustafa, A. E. M., Assery, A. A. A., Asiri, F. M. A., Alfarhan, N. M., Alqarni, A. M., & Alqahtani, F. M. S. (2021). Childhood obesity and its relation with dietary habits among children in Aseer region, Southern Saudi Arabia. *Journal of Family Medicine and Primary Care*, 10(10), 3760.
- [10] Salem, V., AlHusseini, N., Abdul Razack, H. I., Naoum, A., Sims, O. T., & Alqahtani, S. A. (2022). Prevalence, risk factors, and interventions for obesity in Saudi Arabia: a systematic review. *Obesity Reviews*, 23(7), e13448.
- [11] Alotaibi, M. S., Fox, M., Coman, R., Ratan, Z. A., & Hosseinzadeh, H. (2022). Smartphone addiction prevalence and its association on academic performance, physical health, and mental well-being among university students in Umm Al-Qura University (UQU), Saudi Arabia. *International journal of environmental research and public health*, 19(6), 3710.
- [12] Al-Daghri, N. M., Hussain, S. D., Ansari, M. G., Khattak, M. N., Aljohani, N., Al-Saleh, Y., ... & Alokail, M. S. (2021). Decreasing prevalence of vitamin D deficiency in the central region of Saudi Arabia (2008-2017). *The Journal of Steroid Biochemistry and Molecular Biology*, 212, 105920.
- [13] Guo, J., Huang, X., Zheng, A., Chen, W., Lei, Z., Tang, C., ... & Li, X. (2022). The Influence of Self-Esteem and Psychological Flexibility on Medical College Students' Mental Health: A Cross-Sectional Study. *Frontiers in Psychiatry*, 13, 836956.
- [14] Auerbach, R. P., Mortier, P., Bruffaerts, R., Alonso, J., Benjet, C., Cuijpers, P., ... & Kessler, R. C. (2018). WHO world mental health surveys international college student project: prevalence and distribution of mental disorders. *Journal of abnormal psychology*, 127(7), 623.

- [15] Owens, M., Townsend, E., Hall, E., Bhatia, T., Fitzgibbon, R., & Miller-Lakin, F. (2022). Mental health and wellbeing in young people in the UK during lockdown (COVID-19). *International Journal of Environmental Research and Public Health*, 19(3), 1132.
- [16] Solmi, M., Radua, J., Olivola, M., Croce, E., Soardo, L., Salazar de Pablo, G., ... & Fusar-Poli, P. (2022). Age at onset of mental disorders worldwide: large-scale meta-analysis of 192 epidemiological studies. *Molecular psychiatry*, 27(1), 281-295.
- [17] Geiker, N. R. W., Astrup, A., Hjorth, M. F., Sjödin, A., Pijls, L., & Markus, C. R. (2018). Does stress influence sleep patterns, food intake, weight gain, abdominal obesity and weight loss interventions and vice versa?. *Obesity Reviews*, 19(1), 81-97
- [18] Lipson, S. K., Zhou, S., Abelson, S., Heinze, J., Jirsa, M., Morigney, J., ... & Eisenberg, D. (2022). Trends in college student mental health and help-seeking by race/ethnicity: Findings from the national healthy minds study, 2013–2021. *Journal of Affective Disorders*, 306, 138-147..
- [19] Newnham, E. A., Mergelsberg, E. L., Chen, Y., Kim, Y., Gibbs, L., Dzidic, P. L., ... & Leaning, J. (2022). Long term mental health trajectories after disasters and pandemics: A multilingual systematic review of prevalence, risk and protective factors. *Clinical Psychology Review*, 102203.
- [20] Abdulghani, H. M., AlKanhal, A. A., Mahmoud, E. S., Ponnampuruma, G. G., & Alfaris, E. A. (2011). Stress and its effects on medical students: a cross-sectional study at a college of medicine in Saudi Arabia. *Journal of health, population, and nutrition*, 29(5), 516.
- [21] Ortega, F. B., Lavie, C. J., & Blair, S. N. (2016). Obesity and cardiovascular disease. *Circulation research*, 118(11), 1752-1770.
- [22] Richardson, A. S., Arsenault, J. E., Cates, S. C., & Muth, M. K. (2015). Perceived stress, unhealthy eating behaviors, and severe obesity in low-income women. *Nutrition journal*, 14(1), 1-10.
- [23] Sarkar, S., Gupta, R., & Menon, V. (2017). A systematic review of depression, anxiety, and stress among medical students in India. *Journal of Mental Health and Human Behaviour*, 22(2), 88.
- [24] Alsalhi, A. H., Almigbal, T. H., Alsalhi, H. H., & Batais, M. A. (2018). The relationship between stress and academic achievement of medical students in King Saud University: A cross-sectional study. *Kuwait Med J*, 50(1), 60-5.
- [25] Soh, N. H. B. C., Roy, A., & Lakshmi, T. (2017). Stress, anxiety, and depression in clinical practice of undergraduates and awareness of its effective management-A survey. *Journal of Advanced Pharmacy Education & Research/ Apr-Jun*, 7(2).
- [26] Ramón-Arbués, E., Gea-Caballero, V., Granada-López, J. M., Juárez-Vela, R., Pellicer-García, B., & Antón-Solanas, I. (2020). The prevalence of depression, anxiety and stress and their associated factors in college students. *International journal of environmental research and public health*, 17(19), 7001.
- [27] Fontbonne, A., Currie, A., Tounian, P., Picot, M. C., Foulatier, O., Nedelcu, M., & Nocca, D. (2023). Prevalence of Overweight and Obesity in France: The 2020 Obepi-Roche Study by the “Ligue Contre l’Obesité”. *Journal of Clinical Medicine*, 12(3), 925.

- [28] Mahroon, Z. A., Borgan, S. M., Kamel, C., Maddison, W., Royston, M., & Donnellan, C. (2018). Factors associated with depression and anxiety symptoms among medical students in Bahrain. *Academic Psychiatry*, 42, 31-40.
- [29] Rahimibashar, M., & Motahari, M. (2013). Assessment of overweight status, obesity and abdominal obesity among nursing students in Islamic Azad University of Lahijan
- [30] Ngan, S. W., Chern, B. C. K., Rajarathnam, D. D., Balan, J., Hong, T. S., & Tiang, K. P. (2017). The relationship between eating disorders and stress among medical undergraduate: a cross-sectional study. *Open Journal of Epidemiology*, 7(02), 85
- [31] Fernández Rodríguez, C., Soto López, T., & Cuesta Izquierdo, M. (2019). Needs and demands for psychological care in university students. *Psicothema*.
- [32] González-Sanguino, C., Ausín, B., Castellanos, M. Á., Saiz, J., López-Gómez, A., Ugidos, C., & Muñoz, M. (2020). Mental health consequences during the initial stage of the 2020 Coronavirus pandemic (COVID-19) in Spain. *Brain, behavior, and immunity*, 87, 172-176.
- [33] Fadardi, J. A. V. A. D. (2011). A comparison of motivational structure and eating behaviors between overweight and obese and normal weight women. *Journal of Fundamentals of Mental Health*, 13(50), 81-170.
- [34] Silén, Y., & Keski-Rahkonen, A. (2022). Worldwide prevalence of DSM-5 eating disorders among young people. *Current Opinion in Psychiatry*, 35(6), 362-371.