

Prevalence of weight gain among students of Mosul University, Iraq during quarantine 2020

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Objective: To find how common weight gain was among Mosul University students during the Iraqi quarantine in 2020.

Methodology: In this quantitative cross-sectional study, data were gathered using an electronic version of an Arabic-language questionnaire form from the 1st of September to 1st December 2021. We recorded demographic characteristics, eating habits and weight before and during the pandemic.

Results: Out of 1688 students, 67% were males. Age of 40.17% was between 21 – 23 years. We found that

41% had same appetite and 54% had same number of meals per day and 57.6% had no extra activities. There is a significant value of age groups and gender with all forms of BMI.

Conclusion: This study concluded that there was a big difference of BMI during quarantine with a significant values of age groups and gender with all forms of BMI.

Keywords: Prevalence, weight gain, students, Mosul University, Covid Quarantine.

INTRODUCTION

COVID-19 has spread to practically every country on the planet, making it a pandemic. Isolation and quarantine are only public health methods used for prevention. People have been forced to stay indoors, suffer mental anguish, lack of exercise, and disturbed sleep, with potential to weight gain.¹ WHO labeled COVID-19 epidemic²⁻⁴ and to avoid the spread of infection, the authorities implemented quarantine and isolation.^{5,6} This SARS-CoV-2 was labeled as COVID-19.⁷ Social isolation was advised.⁸

As a result, people in a household had effect on weight during quarantine. Foods having an extended shelf life contain more salt, sugar, and trans fats, which raises the risk of obesity.⁹ Food craving is a complex affair that includes cognitive "e.g., thinking about food), affective" e.g., a desire to eat or mood changes" behavioral "e.g., seeking and meals", and physiological "e.g., salivation" components.¹⁰ Carbohydrates increase serotonin levels, which change of the mood, and this effect is proportionate to the diet's glycemic.¹¹ Pandemic related stress during the quarantine, making them more sedentary and the lower cost of unhealthy foods lead to the rise in obesity rates.^{12,13} Some individuals had more time to prepare and overeat because of high food bills and food insecurity.^{14,15}

Obesity is linked to higher risk of developing severe COVID-19 infections, which can lead to prolonged increased morbidity and mortality.¹⁶ Weight gain due to

epidemic has been more pronounced.¹⁷ Significant weight gain has a negative impact on metabolism, creating a risk of diabetes and heart disease.¹⁸ In Mosul City, no national data are available on the prevalence of weight gain during lockdown of Covid-19 particularly among university students and national data of overweight problems in Mosul are absent. In this study, we addressed the effect of quarantine of Covid-19 on Mosul university student.

METHODOLOGY

This cross-sectional survey included students from all Mosul University's colleges during year 2020 and was conducted from September 1st to December 1st, 2021. We used random sample procedure. Participants had to be Mosul university students and there were no particular exclusion criteria. All students signed an informed consent. The Data Collection was done via an electronic form created from queries entered into a Google search. An electronic version of Arabic-language questionnaire was used. There were 3 components to the questionnaire: a) demographic characteristics of respondents; b) eating habits, such as binge eating, nibbling, and consuming beverages and c) anxiety before and during the epidemic. The study covered hunger, binge-eating disorder behaviors, dietary habits, time of increased food consumption, amount and variety of snack items consumed during the day, as well as water and coffee consumption.

Physical activity during the day was investigated using two questions: one to describe the changes in the physical activity compared to the usual routine before to the isolation, and the other to document the rise in the number of hours spent in strength training. Worries were rated on a scale of one to ten. Those who gained weight (yes) and those who did not (or I don't know) were sorted into two groups based on their weight change. Self-reported current weight and height were used to compute BMI, which was calculated as weight in kilograms divided by height in meters squared. BMI 18.5 was classified as underweight, BMI 18.5 – 24.9 was considered as normal or healthy weight, BMI 25.0 – 29.9 was defined as overweight, and BMI 30 was defined as obesity.

In this study, the questionnaire's validity was re-evaluated. Specialists in community medicine, community nursing, and psychology were consulted regarding the questionnaire, and their approval was granted. The form was developed in its final version after deficiency areas were identified and corrected, and used as a solid foundation for the building of the final form of the questionnaire.

Statistical Analysis: All of the data were examined using SPSS version 25 for statistical analysis.¹⁹⁻²¹ The chi-test for dependent samples was used to examine the statistical variance in weight of participants during the pandemic compared to before it. Following that, the participants were divided into three groups: those who had gained weight, those who had lost weight, and those who had acquired the most weight, in order to find weight increase predictors. Statistical significance was set at 0.05.

RESULTS

Out of 1688 students, 67% were males. Table 1 shows the demographic characteristics of study sample. Moreover, 66.65% had BMI 1 were normal or healthy weight. We found that 41% students had same appetite and 54% had same no. of meals/day (Table 2). Table (3) shows that 57.6% students had no extra activities during

Table1: Socio-demographic characteristic of study population.

Variable		No.	%	Mean	SD
Age	18 – 20 y	550	32.59	1.9467	0.77191
	21 – 23 y	678	40.17		
	23 or More	460	27.25		
Type of college	Academic	1303	77.19	1.2281	0.41972
	Humanistic	385	22.81		
Gender	Male	1136	67.30	1.3270	0.46926
	Female	552	32.70		
BMI1	Under Weight	143	8.47	2.2245	0.8167
	Normal or Healthy Weight	1125	66.65		
	Over Weight	318	18.84		
	Obese	102	6.04		
BMI2	Under Weight	108	6.40	2.3169	0.70034
	Normal or Healthy Weight	1060	62.80		
	Over Weight	397	23.52		
	Obese	123	7.29		
BMI3	Under Weight	101	5.98	2.3874	0.74193
	Normal or Healthy Weight	995	58.95		
	Over Weight	429	25.42		
	Obese	163	9.66		
Total		1688	100		

quarantine. Significance of some variables with forms of BMI is shown in Table 4.

DISCUSSION

This research exposes the many consequences of pandemic confinement on weight gain, as well as the specific traits connected to body weight variations during lockdown. A BMI of over 25 kg has been identified as a risk factor for higher food consumption during confinement. Sleep deprivation, a lack of physical exercise, stress response, loss of control over eating patterns, and increased alcohol and smoking usage were other factors.^{22,23} In the obese population, these effects have a greater impact.²⁴

Weight gain is linked to eating behaviors as well as food composition. Snacking after meals, especially after dinner, has been linked to weight gain.^{13,24} Not all of the impacts of pandemic confinement, on the other hand, resulted in weight gain. During in the April 2020 lockdown, 38 percent of the respondents in an Italian research followed a Mediterranean diet that emphasized healthy lifestyle choices and gave practical guidance on beneficial activities.²³

Pandemic confinement unquestionably increases stress; 73 and 83% of responders, respectively, reported a rise in worry and despair, with 70% reported weight manage concerns, food stockpiling, and stress eating. Working professionals and university students gained weight as a result of stress, and a two-fold mechanism is created when calorie intake is reduced, maintained, or raised in combination with responsive adrenergic-driven energy metabolism involving brown fat tissues.²³

The outcomes were mixed, according to Khan et al study as some participants increased their aerobic exercise while others lowered it, although other hazardous behaviors were identified, e.g. rise of screen time.²⁴ During the incarceration, more unhealthy behaviors were observed. Unfortunately, vulnerable populations do not only exist in under-resourced countries; they also exist in developed ones. Food insecurity has more than doubled in the United States as a result of the outbreak-related economic crisis, affecting up to 23% of households.¹ The percentage of women who took part ranged from 37 percent to 100 percent. Weight gain was related with pandemic confinement in 7.2 – 72.4% of participants while weight reduction was associated with 11.1 – 32.0% persons. The individuals who were already obese gained the most weight. Changes in physical activity, changes in sleep patterns, as well as higher consumption of unhealthy foods and lower intake of nutritious fresh fruits and vegetables, were all connected to higher consumption of unhealthy foods and lower intake

Table2: Eating life style and behavior changes among study sample.

Behaviors		No.	%	Mean	SD
Appetite	Same	692	41	1.8021	0.76370
	Increase	638	37.8		
	Decrease	358	21.2		
No. of meals/day	Same	912	54	1.6316	0.75937
	Increase	486	28.8		
	Decrease	290	17.2		
No. of snacks/day	Same	785	46.5	1.7239	0.76037
	Increase	584	34.6		
	Decrease	319	18.9		
No. of fast food/week	Same	675	40	1.9840	0.88542
	Increase	365	21.6		
	Decrease	648	38.4		
No. of commercial sweets/day	Same	602	35.7	1.9461	0.81046
	Increase	575	34.1		
	Decrease	511	30.3		
Rice, bean & macaroni	Same	851	50.4	1.6576	0.74091
	Increase	564	33.4		
	Decrease	273	16.2		
Fruits and vegetables	Same	740	43.8	1.7690	0.76987
	Increase	598	35.4		
	Decrease	350	20.7		
Eating at night	Same	538	31.9	1.9277	0.74851
	Increase	734	43.5		
	Decrease	416	24.6		
Quantity of water	Same	708	41.9	1.7666	0.74249
	Increase	666	39.5		
	Decrease	314	18.6		
Physical activities	Same	804	47.6	1.7411	0.79188
	Increase	517	30.6		
	Decrease	367	21.7		
Total		1688	100		

Table 3: Physical activity among study sample.

Physical activity		No.	%	Mean	SD
Did the student do extra activities	Yes	715	42.4	1.5764	0.49427
	No	973	57.6		

Table4: Significance of some variables with forms of BMI.

Variable			Under Weight	Normal or Healthy Weight	Over Weight	Obese	Chi-Square	P-Value
BMI 1	Age	18 – 20 Y	69	368	87	26	46.50**	0.000
		21 – 23 Y	53	475	108	42		
		23 or More	21	282	123	34		
	Type of college	Academic	110	862	249	82	1.029	0.794
		Humanistic	33	263	69	20		
	Gender	Male	100	782	190	64	12.150**	0.007
Female		43	343	128	38			
BMI 2	Age	18 – 20 Y	52	350	114	34	31.459**	0.000
		21 – 23 Y	40	443	154	41		
		23 or More	16	267	129	48		
	Type of college	Academic	82	813	311	97	0.736	0.865
		Humanistic	26	247	86	26		
	Gender	Male	81	748	232	75	24.449**	0.000
Female		27	312	165	48			
BMI 3	Age	18 – 20 Y	46	331	124	49	28.125**	0.000
		21 – 23 Y	37	423	163	55		
		23 or More	18	241	142	59		
	Type of college	Academic	73	761	338	131	3.225	0.358
		Humanistic	28	234	91	32		
	Gender	Male	71	710	257	98	22.323**	0.000
Female		30	285	172	65			

of healthy fresh fruits and vegetables.¹⁸

Our research found a high incidence of bad eating habits and inactivity among Mosul university students throughout the epidemic, resulting in significant weight gain. This period of epidemic and quarantine has impacted practically every part of life, and bad eating behaviors, such as snacking excessively, have grown more prominent, indicating rise in weight in the examined population.

CONCLUSION

We studied 1688 students and found eating life style and eating behavior changes during quarantine; 41% had same appetite and 54% had same no. of meals/day. 57.6% had no extra activities. Moreover, there was a big difference of BMI during quarantine with a significant values of age groups and gender with all forms of BMI.

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Conflict of Interest: None declared.

Rec. Date: Feb 18, 2022 Revision Rec. Date: May 4, 2022 Accept Date: May 28, 2022.

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