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Original Article

Obesity risk throughout collective quarantine for the COVID-19

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Abstract

The novel coronavirus outbreak (COVID-19) presented an opportunity to conduct an online survey to research the relationships between changes in body weight, physical activity and lifestyle during an unprecedented occurrence of forced isolation or quarantine among the population of Jadara University. We distributed an electronic questionnaire (cross-sectional) in Jadara University, Jordan, between March and May 2020, where a total of 200 students were approached (43.8% males and 56.2% females). Of 200 questionnaires returned, during the period of semi-lockdown, both females and males increased body weight significantly ($p<0.05$). Changes in body weight are inversely correlated with changes in the number of meals and increased stress during the quarantine. Quarantine carries some long-term effects on the rate of food intake and sleeping also affects the total body weight. With the prolonged quarantine, these figures are subject to increase consequently and the drawback on health status may drop to a considerably large percentage in the community.

Keywords: COVID-19, obesity, lifestyle, body weight, physical activity.

Introduction

The SARS-CoV-2 coronavirus (i.e., COVID-19) has caused major disruption to everyday life worldwide. Because of residence orders and sudden unemployment, millions were stuck at home without their normal routines [1]. Combined with the immense stress of the pandemic and its far-reaching effects, this increase in unstructured time has led to widespread public concerns about vulnerability to over-eating, sedentary activity, and weight gain. Those issues are expressed in the "quarantine" explosion of posts on social media [1].

In March 2020, when many countries were involved in COVID-19 epidemics, the WHO described this outbreak as a pandemic. Governments have taken steps to prevent infection from spreading, i.e., quarantine and isolation [2]. "Quarantine" refers to the separation of persons (or communities) who have been exposed to an infectious disease. "Isolation" refers to separating infected persons [3, 4].

The effects of quarantine on obesity are little understood, but everyone agrees that this corresponds to a time of extreme stress and stress could be associated with an increased risk of obesity [4, 5]. One of the effects of quarantine stress is a lifestyle transition and eating habits improvement [4].

The stress-related eating (defined as attempting to make yourself feel better by eating or drinking in a stressful situation) was significantly linked to obesity, especially in women [6]. There can be a gender-specific sign of anxiety in which women are more likely to use food to cope with stress, while men are more likely to use other oral behaviors such as alcohol consumption or smoking as strategies to cope with stress [3, 4].

The effect of depression on obesity was explained by Mediouni *et al.* and this phenomenon was called depreobesity (Mediouni *et al.*, 2020). In addition, physical activity was diminished due to school closures that have disrupted children's lives (Rundle *et al.*, 2020). For this reason, they consume more unhealthy food, have far

longer screen time and have abnormal sleeping habits, all related to obesity [7]. Reducing energy intake in the quarantine era leads to obesity (Campana *et al.*, 2019).

Therefore, the purpose of this study was to define the relationships between changes in body weight and changes in physical activity during an unprecedented occurrence of forced isolation or quarantine among the population of Jadara University.

Material and methods

Participants and procedure

This is a cross-sectional survey conducted to assess the obesity condition of Jadara University's students during the COVID-19 epidemic in Jordan with an anonymous online questionnaire. The questionnaires were distributed, completed, and collected through an online survey platform. Informed consent was provided on the first page, and the questionnaires could be started only after the consent of the respondent was given.

During the COVID-19 quarantine in Jordan, which was a time of self-isolation, remote work and the prohibition of access to indoor (*e.g.*, gyms and sports centers) and outdoor places for university students, the electronic survey was accessible between 30 April and 23 May 2020. Questions on multidimensional improvements in dietary lifestyle (improvements in food group intake, screen time, and sleeping) were included in this study.

Statistical analyses

The data were analyzed via Statistical Package for the Social Sciences (SPSS, version 20.0) software. The chi-square test was used for qualitative variables, and data were analyzed using the SPSS version 20 on percentages calculated for each categorical variable. The student's test was used to determine the significance of differences between the mean values of two independent variables. All statistical tests were two-tailed, and $p<0.05$ was considered statistically significant.

Results

The sample involved 200 respondents, including working students (54%), while 46% of students did not work. More than half of the participants (56.2%) were women, and more than half were aged 18 to 23. Most were urban residents (66.2%), were single (54.5%), and had studied in medical college (41.5%).

The details of the demographic characteristics of subjects by obesity and normal participants are shown in Table 1. There was a significant difference between obesity and normal weight with respect to students' academic year and occupation status ($p<.05$). Most obese students were among the students without work, while students who had work exhibited normal status. Furthermore, the differences in students' academics also significantly impact students' mental health status.

The results indicate a statistically-significant association of obesity with gender ($p<0.043$). Among the obese students, slightly more obese men (47, 51.1%) than women (45, 48.9%) were identified (Table 1). Statistically, the largest group was people aged 18–23 years. In our samples of participants, we found a significant value between gender and increasing body weight ($p<0.043$), most of them were women (56.2%). There was also a significant correlation related to the age of the overweight participants ($p<0.042$), the largest group was people aged 18–23 years.

Statistically significant differences ($P<0.001$) are observed between working participants who: did not

Table 1: Baseline characteristics of the 200 study participants.

Variables	Total=200 n (%)	Increased weight=92 n(%)	Unchanged weight=108 n (%)	P-value
Gender				0.043
Male	88 (43.8)	47 (51.1)	41 (38.0)	
Female	112 (56.2)	45 (48.9)	67 (62.0)	
Age (years)				0.042
18–23	101 (50.7)	43 (46.7)	58 (53.7)	
24–28	71 (35.3)	30 (32.6)	41 (38.0)	
29–34	28 (13.9)	19 (20.7)	9 (8.3)	

Table 1: Continued.

Variables	Total=200 n (%)	Increased weight=92 n(%)	Unchanged weight=108 n (%)	P-value
During the Corona crisis, did you go to work?				0.001
Yes	108 (54.0)	38 (41.3)	70 (64.8)	
No	92 (46.0)	54 (85.7)	38 (35.2)	
During the Corona crisis, did you exercise?				0.25
Yes	116 (57.7)	49 (53.3)	67 (62.0)	
No	84 (41.8)	43 (46.7)	41 (38.0)	
During the Corona crisis, did you follow a healthy diet?				0.21
Yes	116 (57.7)	49 (53.3)	67 (62.0)	
No	84 (41.8)	43 (46.7)	41 (38.0)	
Did you weight yourself before the quarantine?				0.854
Yes	116 (57.7)	54 (58.7)	62 (57.4)	
No	84 (41.8)	38 (41.3)	46 (42.6)	
Did you weight yourself after the quarantine?				0.854
Yes	116 (57.7)	54 (58.7)	62 (57.4)	
No	84 (41.8)	38 (41.3)	46 (42.6)	
The number of meals you eat during the day during the daily quarantine period?				0.001
2	23 (11.4)	18 (19.6)	5 (4.6)	
3	118 (58.7)	19 (20.7)	99 (91.7)	
4	48 (23.9)	44 (47.8)	4 (3.7)	
Did not remember	11 (5.5)	11 (12.0)	0 (0.0)	

go to work (46% and those who did go to work (54%). No significant exercise difference was found among participants ($p<0.25$).

Concerning exercise among the participants, no scientific value was shown, although 57.7% of the participants said that they practiced sports, and this result is similar to not following a healthy diet and weight control during the quarantine period. The number of meals during the daily quarantine period was recorded with statistically significant differences ($P<0.001$), as shown in Table 1. In addition to fast food advertising directed at students, some evidence suggests that a disproportionate number of fast-food restaurants are located in close proximity to universities.

Discussion

Large proportions of the sample members in a number of related, recent studies reported that they were spending most of their time during the quarantine periods at home due to the governmental restrictions on mobility during that period. Hence, the basis for the present study, that is, the longer than usual time spent at home during the quarantine times, is validated [8, 9].

Among the participants, 58.7% reported that they had gained body weight. "During the quarantine, eating behaviors reported to increase", "eating with friends and family more often", "eating in response to food sight and smell", "eating because you crave certain foods", "eating in response to stress", "eating when bored", and "snacking more after dinner" [8, 10]. If these effects were extrapolated to the population, they would have important consequences. Indeed, strict self-quarantine procedures are still being followed during data collection and document preparation. Thus, after all is said and done, an increased number of meals will affect a higher percentage of individuals [10].

Increased eating numbers during quarantine in response to sight and smell could be regarded as an

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integral part of impulsivity and disinhibition of the psychological variables. Impulsiveness is a hasty reaction to an external stimulus without worrying about negative consequences and has been linked to binge eating [8]. Disinhibition, also known as excessive feeding or disturbance of an inhibited state where there might be a loss of control over feeding, is often related to weight gain [11, 12].

Increased fear of COVID-19 and quarantine were significantly associated with greater restraint in feeding, consistent with findings from previous studies showing that dietary restriction is associated with poorer psychological well-being and greater anxiety [13].

It is currently unclear if the weight gained during the quarantine phase will be lost after the self-quarantine steps have been reduced. Also, we found that greater boredom was linked to more weight-related worries. Indeed, despite other detrimental feelings, boredom is a great predictor of eating activity [13]. If one is looking at weight gain in children over the summer or in adults over the holidays, research shows that those who gain weight more than likely will not lose the weight gained over those periods [4, 11]. Thus, those who gained weight could not return to pre-pandemic weight during self-quarantine [3].

Conclusion

While quarantine is important to reduce the spread of the disease, various negative psychological effects such as fear of infection, obesity, anger and boredom are produced. Our findings showed that the fear of COVID-19 quarantine was associated with more concern about eating restriction, weight, and type in the whole study. Measures for public health management are required to deny variables of eating disorders linked to the COVID-19 outbreak during the quarantine and to encourage healthier behaviors to lower the risk of psychological distress. Additional assistance is warranted for people at increased risk of adverse psychological and social effects of quarantine/convention.

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Conflict of interest

The authors declare no conflict of interest.

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