Assessment Impact of COVID-19 Virus on the Obesity and Depression on Children's in Makkah Al-Mukarramah Saudi Arabia2021

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Abstract:

Background

The COVID-19 pandemic is spreading all over the world, particularly in developed countries where obesity and depression is also widespread. coronavirus- 2019 is a highly infectious disease that caused a global pandemic around the world. Obesity is strongly associated with other metabolic disorders, including diabetes, hypertension, dyslipidemia, cardiovascular disease even some cancers. Overweight and obesity also increases the likelihoods of suboptimal glycaemic control making it difficult to achieve glycaemic targets. In the past three decades, despite considerable advances in treatment modalities of diabetes, it has been shown considerable gaps between patients 'outcome and acceptable treatment in developed and also in developing countries. Obesity is highly prevalent among type 2 diabetic patients. Some modifiable risk factors were identified. Multidisciplinary effort is warranted to reduce obesity among type 2 diabetic patients.

Aim of the study: To assessment impact of COVID-19 virus on the obesity and depression on Children's in Makkah Al-Mukarramah Saudi Arabia2021.

Method: An online cross-sectional survey was utilized. Children's in Makkah Al-Mukarramah conducted among secondary school students at Makkah, during the April to June, 2021, a total of 300 student aged 10–18 years, available students of secondary school

children were included in the study. A structured online self-reported questionnaire sheet was used to assess children's impact of COVID-19 virus on the obesity and depression **Result**: shows that most of the participants (39.0%) were in the age group 16 years follow by the (37.0%)were in the age <14 years, the majority of them were male (57.0%), regarding BMI category the majority of participant are obesity were(66.0%), Regarding the Chronic Medical conditions most of participant have diabetes were(29.0%). Regarding the relation of PHQ-9 of particular during COVID19 pandemic the most of participant Positive (PHQ-9>4) were 67.0% while Negative (PHQ-9<4) and X^2 34.003 and a significant relation were P=0.001

Conclusion: The study highlights that the Impact of COVID-19 virus on the obesity and depression on Children's at Saudi Arabia in Makkah due to the COVID-19 pandemic caused a variety of lifestyle changes, physical inactivity and psychological problems among Population in the Makkah. In addition Anxiety and depression levels amongst Population at Saudi Arabia in healthcare were found to be high when assessed during the COVID-19 pandemic.

Keywords: Impact, COVID-19, obesity, depression, Population, Saudi Arabia, Makkah**.**

1. Introduction

Though healthy children and youth are less vulnerable to COVID-19 [1], there remains genuine concern about transmission of the virus, especially the spread to older people and those with underlying medical conditions. Consequently, the COVID-19 virus outbreak has led to significant changes in daily life for children, youth, and their families, with specific recommendations and restrictions varying within and between countries. Like many countries, Canada imposed restrictions requiring physical distancing (two metres), and limited community and social gatherings and interactions, sport, and playground and park use [2]. Most children and youth are no longer attending school, with classroom lessons replaced by home-schooling and online learning activities. During the initial response to the COVID-19 outbreak and recommendations for physical distancing, behaviour restrictions, and overall instructions to 'stay home', families are seeking guidance and solutions to preserve healthy routines, including healthy movement behaviours and opportunities to spend time outdoors [3, 4].

Obesity is major public health problem among the Children's in Saudi Arabia. Obesity are very prevalent and associated with numerous health complications. eating is defined as the tendency to overeat as a coping mechanism for regulating and reducing negative emotions, during the (COVID-19) pandemic eating is increased prevalent among Children's and is associated with obesity The coronavirus 2019 (COVID-19) pandemic and mandatory quarantine increased, emotional eating (EE).[5]

Coronavirus disease 2019 (COVID-19) has rapidly spread globally, forcing countries to apply lockdowns and strict social distancing measures. The outbreak of the 2019 novel coronavirus disease (COVID-19) was first reported in late December 2019 solely in the city of Wuhan, China[2]. Despite strategies adopted by the Chinese government to stop the infection, it continued to spread throughout the world. By the end of January 2020, WHO declared COVID-19 as a public health emergency of international concern [6] and on 11 March 2020, WHO characterized this epidemiological phenomenon as a global pandemic[7]. According to

the situation report published by the WHO on 5 July 2020, there were over11 million confirmed cases globally and about 1.1 million cases in the Eastern Mediterranean Region[8]. In the Middle East and North Africa region, the Gulf countries like Saudi Arabia, Qatar, United Arab Emirates and Kuwait reported the highest numbers of confirmed cases proportionally to the population size[9]. According to the Organization for Economic Cooperation and Development, some countries in the region have taken crucial measures to combat this pandemic, closing schools, kindergartens, religious places, airports and malls, as well as preventing social gatherings. Others have gone far by suspending government departments [10] The 24-hour curfew was decided based on the number of reported cases in every city. Numerous different countries have additionally taken comparative measures by advancing social separating and isolate guidelines to ensure the safety of populations at large.[11,12]. This authorized isolate can have a heavy psychological impact, above all among persons and children's with obesity who are already at risk of social isolation and experiencing higher rates of depression. [13]. The emotional wellness trouble during the COVID-19 outbreak has been evaluated by a few studies, and an increased rate of anxiety disorder, depressive symptoms, perceived stress, post-traumatic stress disorder, and poor sleep quality has been reported.[14,]. Usual way of life propensities have been intensely upset by the compulsory stay-at-home requests, additionally rise of obesity significantly during a the pandemic. Which may result in important behavior changes, particularly dietary habits . [15]

Literature review:

Several studies have reported the impact of COVID-19 not only on the anxiety and depression levels, but also on the sleep pattern among individuals [16,17]. Emotional distresses can lead to changes in sleep patterns and sleep difficulties, which have been reported among individuals and students who suffer from higher levels of stress, anxiety and depression [18].

In a study of health care workers in Hubei province and surrounding regions, [19] found similar levels of depression: 49.6%of participants had no depression (vs 47.5%of participants), while 35.6%of participants had mild depression (vs 24.6%), 8.6%of participants had moderate depression (vs14.8%), and 6.2%of participants had moderately severe depression (vs 7.9%). The Lai et al15 sample in China included only health care professionals and was concentrated in the Hubei region, while our sample included a representative sample of all US residents and sampled the whole country.[20]

Numerous literature have documented that obesity is an important modifiable risk factor Furthermore, it has been linked to many adverse health consequences including hypertension, hyperglycemia, dyslipidemia, cardio-vascular diseases, osteoarthritis, gallbladder diseases, respiratory tract diseases and psychiatric disorders[21,22]. The prevalence of obesity has increased dramatically throughout the last 3 decades with adverse consequences to public health [23]. Obesity is defined by a 30 or higher body mass index (BMI) [12] .

Additionally. [24] emphasized that women's empowerment associated with economic development, robustly predicts higher mean BMI . As it turns out, the association is complex and differs depending on the country of study, and therefore on socio-demographic specificity. Perhaps this relationship is valid in typical market and lifestyle conditions. It is

also possible that the time of COVID-19 isolation was completely different from previous people's experiences, unpredictable and stressful, and therefore cannot be compared to times of relative economic calm, but no comparative data are available yet. It is important to note that weight gain prevailed in women with obesity before the pandemic.[25]

In Poland, the greatest attention is paid to excessive body weight. According to the WHO Global Health Observatory data, in 2016, the percentage of women with excessive body weight (BMI 25 kg/m2) accounted for 39.2% in the world, 54.3% in Europe, and 51.1% in Poland, which was comparable with other European countries, like Italy (51.5%) and Spain (54.1%). The results of the last Polish study [26] indicated that excessive body weight characterized 52.4% of women, and among them, 11.3% had obesity . The growing pandemic of obesity, not only in women, is observed in most of the world and also in Poland, which causes a serious public health problem. A common health consequence of obesity in women is the raised risk for diet-related diseases, that is, diabetes, cardiovascular diseases, and some cancers [27].

The increase in intake of foods reach in fat and sugars and/or a decrease in physical activity due to increasing urbanization are the main and obvious reasons for the positive energy balance and the weight gain, the changes in body weight can affect a significant percentage of the population. People who are overweight or obese are most prone to those negative modifications. Considering the pandemic nature of obesity and COVID-19, their cumulative consequences can strongly affect the health situation of societies, because, in addition to an increase in total food intake and particularly in the consumption of unhealthy foods, the self-reporting of boredom/loneliness, anxiety/depression have also been noted [28]

Rationale

The COVID-19 pandemic is a major problem in our society and most expected to continue to enormous burdens, as it was increasingly exposed to the COVID-19 disease and it's socioeconomically and health consequences, the general population became vulnerable to the a lot of impacts of COVID-19 worldwide, found that the COVID-19 effect increased the rate on the obesity and depression. They highlighted the possibility of a biological link between the COVID-19 and obesity, and depression, In Saudi Arabia, the first case was detected on 2 March 2020, after which there has been a rapid rise in cases. As of 13 April 2020, commercial centers, restaurants, beaches, and resorts were closed, and a 24-h curfew has been implemented in many cities in Saudi Arabia. Residents are authorized to leave for essentials, like food and medications, between 6 a.m. and 3 p.m. Which led to an increase in people's leisure periods, and thus people spent most of their time eating which led to weight gain and depression among people.

2.2 Aim of the Study

To assessment impact of COVID-19 virus on the obesity and depression on Children's in Makkah Al-Mukarramah Saudi Arabia2021.

2.3 Objectives:

➢ To describe the Impact of COVID-19 virus on the obesity and depression on Children's at Saudi Arabia in Makkah Al-Mukarramah.

3. SUBJECTS AND METHODS

3.1 Study design:

The study has been carried out in Makkah Al-mukarramh is the holy city of every Muslim in the world. It is the main place of the pilgrims to perform Umrah and Hajj. Makkah is a modern city and there is a continuous working to improve the infrastructure of Makkah for the sake of both Makkah citizens and pilgrims. An online cross-sectional survey was utilized. Children's in Makkah Al-Mukarramah conducted among secondary school students at Makkah, during the April to June, 2021, a total of 300 student aged 10–18 years, available students of secondary school children were included in the study. A structured online self-reported questionnaire sheet was used to assess children's impact of COVID-19 virus on the obesity and depression

Study setting / study area:

Study participants has been recruited on Makkah Al-mukarramh including secondary school students at Makkah, during the April to June, 2021, a total of 300 They are distinguished by their environment and the large number of residents in them, as well as the large number of foreigners one of the most important characteristics of Makkah is its locations, which is characterized good environment and the large number of residents in them.

Study population:

The researcher selected participants have obesity has been recruited from secondary school students at Makkah, in Saudi Arabia.

Study design:

A cross-sectional study has been conducted to assess the Impact of COVID-19 virus on the obesity and depression on children's at Saudi Arabia in Makkah Al-Mukarramah attendants in primary health care center data collection during April 2021.

Eligibility Criteria

a. Inclusion criteria:

The inclusion criteria were healthy Saudi females and males and have obesity(10–18 years old) living in Saudi Arabia and at the time the study was conducted have COVID-19

b. Exclusion criteria.

➢ Participants who refused to participate in the study
➢ Patients with language barriers .
➢ Saudi less than 10 years

Sample size

The total number of participants has been recruited from secondary school students at Makkah, during the April to June, 2021, Based on this information sample size was calculated using a website (raosoft.com). The resulted estimated sample size is (300) . The confidence interval is 95% and margin of error is 5%. The estimated prevalence used is 50% to calculate maximum sample size .

Sampling technique

The researcher has been using simple random sample technique. The researcher obtained the approval from family medicine program administrator, after that, The researcher has been Permission from the regional Research and Ethical Committee and participants. The online survey has be disabled when the sample size is achieved, the primary participants has be requested to rollout the survey further.

Data collection tool:

The questionnaire is designed based on previous studies and frameworks to Impact of COVID-19 virus on the obesity and depression on Children's at Saudi Arabia during Covid-19 Pandemic . The questionnaire was developed in English and was then translated into Arabic. The questions were first pre-tested and were revised and finalized after it was pilot tested. Before completing the survey, participants were required to indicate their consent using a forced response question followed by the survey questionnaires. The survey is estimated to take ~10 min to complete

The questionnaire consisted of questions that

First part General and Socio demographic Information
These variables included contact data (email or mobile phone number), age, education level, income, Chronic Medical conditions, Working/studying from home.
Second part The questionnaire collected socio-demographic characteristics, depression Symptoms in participants before and during the COVID-19 Pandemic (via the PHQ-9 patient depression questionnaire)
Third part: Third part: the BMI category changes and weight changes during and before the COVID-19, obesity and depression Information and Symptoms. This study used the Arabic version that has been validated and extensively used in the Arabian population. Participants were asked to report their height in cm and their weight in kg and these values were used to determine the body mass index (BMI, kg/m2). The World Health Organizations (WHO) categorizes BMI cutoffs into four groups: underweight (<18.5 kg/m2), normal weight (18.5–24.9 kg/m2), overweight (25.0–29.9 kg/m2), and obese (>30 kg/m2). Questions related to the mandatory quarantine period included weight change because of lockdown (increase/decrease/no change), following a weight loss diet (yes/no), number of meals and snacks per day, fast food intake and its frequency, and the frequency of eating or the urge to eat sweets (Likert-type scale [hereafter "Likert scale).

A Pilot study

Was carried out at the questions were first pre-tested and were revised and finalized after it was pilot tested. Before completing the survey, participants were required to indicate their consent using a forced response question followed by the survey questionnaires. This study has been conducted and all suggestions taken into consideration.

Statistical Analyses

Data were analyzed using SPSS version 24.0. Continuous variables were presented as the mean± SD, while categorical variables were presented as n (%). Differences in means and

percentages were calculated using independent sample t-test, **Chi-square** , independence to analyses the association and the difference between two categorical variables or using other statistical tests if needed. A p-value < 0.05 was considered statistically significant.

Ethical consideration :
➢ Permission from family medicine program was obtained .
➢ Permission from the regional Research and Ethical Committee has been given to conduct our study.
➢ All the subjects have been participating voluntarily in the study .
➢ Privacy of information and confidentiality has been maintained .
➢ Full explanation about the study and its purpose was carried out to obtain their participation.

Budget: Self-funded

Result

Table 1 distribution of Socio-demographic Information of the participants and changes in eating habits among participants during the COVID-19 in Saudi Arabia

	N	%
Age		
<14	111	37
14	72	24
<16	117	39
Gender		
Female	129	43
Male	171	57
level of education you have completed?		
Primary/ Intermediate	72	24
Secondary school	228	76
BMI Category		
Underweight	96	32
Normal weight	36	12
overweight	66	22
Obesity	102	66
Chronic Medical conditions		
Asthma	54	18
Diabetes	87	29
Heart disease	66	22
High blood pressure	57	19
High cholesterol/Hyperlipidemia	39	13
Staying at home since COVID-19		
Not going outside at all	153	51
Going outside for walks or exercise	96	32

Going outside for necessities (food, medications)	33	11
Visiting close family/friends	18	6
Working/studying from home		
Yes	126	42
No	174	58
COVID-19 symptoms		
Asymptomatic	84	28
Very mild	90	30
Moderate	39	13
Severe	33	11
Very severe	54	18
Individuals reporting changes in mealtime during the COVID-19		
No food	24	8
Mild food	51	17
Moderate food	102	34
Severe Food	123	41
Individuals reporting changes in the daily number of meals consumed during the COVID-19		
No food	54	18
Mild food	63	21
Moderate food	102	34
Severe Food	81	27

Table 1 shows that most of the participants (39.0%) were in the age group 16 years follow by the (37.0%)were in the age <14 years, the majority of them were male (57.0%) while female(43.0%), regarding level of education the majority of participant are secondary school were(76.0%), regarding BMI category the majority of participant are obesity were(66.0%), Regarding the Chronic Medical conditions most of participant have diabetes were(29.0%) while Heart disease pressure were(22.0%), regarding Staying at home since COVID-19 most of participants Not going outside at all were(51.0%), regarding the Working/studying from home most of participants answer No were(58.0%)while answer Yes were(42.0%), Regarding the COVID-19 symptoms most of participant have very mild were(30.0%) . that the majority (41.0%) of the Individuals reported changes in mealtime during the COVID-19 to severe food follow by moderate food were(34.0%),

also individuals reporting changes in the daily number of meals consumed during the COVID-19 to moderate food were(34.0%) follow by severe food were (27.0%)

Figure (1) Distribution of body mass changes (BMI) during pandemic COVID-19
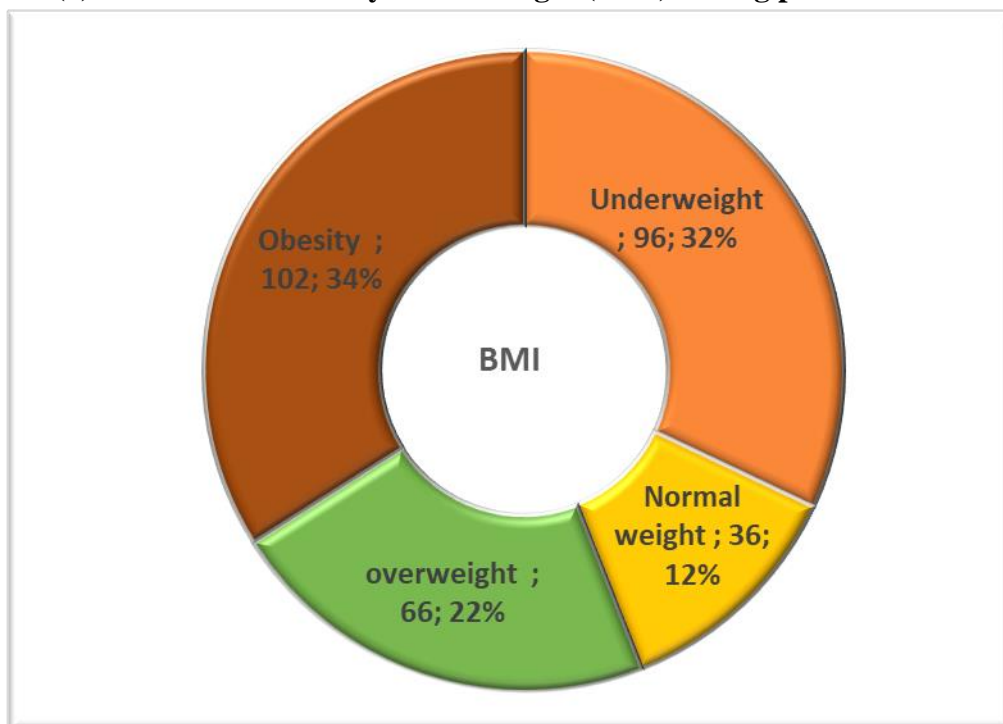
Table 2 Distribution of the change of food shopping and eating habits since COVID-19 stay-at- obesity study

	N	%
Food shopping frequency		
Never/ Home delivery	162	54
1-2 times/month	63	21
1time/week	33	11
2 times/week	42	14
Reasons for changing eating habits during the COVID-19		
Boredom	57	19
Anxiety related to food availability	63	21
Unavailability of food at home	33	11
Availability of food at home	54	18
Having more time to cook	24	8
Long working hours	69	23
Predicting body mass changes during pandemic		
Negative Lifestyle Changes	171	57
Positive Lifestyle Changes	90	30
Diet Quality	39	13
Stockpile food		
Less	54	18
Unchanged	165	55

More	81	27
Follow healthy diet plans		
Easier	45	15
Unchanged	192	64
More challenging	63	21
Stress eat more		
Yes	156	52
No	144	48
Cooking activity		
Less	54	18
Unchanged	93	31
More	153	51
Baking activity		
Less	204	68
Unchanged	57	19
More	39	13
Cannot afford to eat balanced meals		
Often	210	70
Sometimes	63	21
Never	27	9
Skip meals		
Yes	126	42
No	174	58

Table 2 shows that the food shopping frequency the majority of the sample reported never/ home delivery were(54.0%), regarding the reasons for changing eating habits during the COVID-19 the reasons for these changes the majority were(21.0%) anxiety related to food availability, was reported among all availability of food at home were (18.0%) , regarding the predicting body mass changes during pandemic most of participants negative lifestyle changes were(57.0%) while positive lifestyle changes were(30.0%), regarding the stockpile food the majority of the participants answer unchanged (55.0%),but regarding during stress eat more majority of the participants answer No were(48.0%), also cooking activity the majority of the participants more activity were(51.0%), regarding the cannot afford to eat balanced meals the majority of the participants often were(70.0%),

Table 3 Distribution Frequency of consumption of particular foods during COVID19 pandemic (Frequencies and percentages)

Food items		≥4 times/d	2–3 times/d	Once/d	1–4times/week	Never	% of using
Fruits	N	36	66	54	78	66	44.00
	%	12	22	18	26	22	
Vegetables	N	18	30	66	90	96	32.00

	%	6	10	22	30	32	
Milk and milk products	N	75	87	33	36	69	55.25
	%	25	29	11	12	23	
Meat/fish/chicken	N	225	36	18	9	12	87.75
	%	75	12	6	3	4	
Bread/rice/pasta	N	198	63	21	15	3	86.50
	%	66	21	7	5	1	
Sweets/desserts	N	180	36	57	21	6	80.25
	%	60	12	19	7	2	
Salty snacks	N	48	66	54	63	69	46.75
	%	16	22	18	21	23	
Coffee/tea	N	117	72	60	45	6	70.75
	%	39	24	20	15	2	
Sweetened drinks (soda, juice)	N	201	45	6	15	33	80.50
	%	67	15	2	5	11	

Table 3 presents the frequency of consumption for particular food products during the COVID-19 pandemic among participants. As shown, (22.0%) of surveyed participants did not consume fruits on a daily basis and (96.0%) did not consume vegetables daily. However, (30.0%) of participants reported consuming milk and milk products 2–3 times every day followed by ≥4 times/d(29.0%) and meat/fish/chicken were ≥4 times/d(75.0%). However, were(32.0%)of participants reported consuming sweets or desserts ≥4 times/day and(41.0%) consumed Salty snacks never. **Sweets/desserts**, as (60.0%) of those surveyed reported consuming sweetened drinks ≥4 times/day .

Table 4 Distribution the relation between sings and depression symptoms the COVID-19 Pandemic

		Depression symptoms the COVID-19 Pandemic				Chi-square	
		0	1	2	3	X²	P-value
1. Little interest or pleasure in doing things	N	75	33	69	123	54.720	<0.001*
	%	25	11	23	41		
2. Feeling down, depressed, or hopeless	N	48	93	66	93	19.440	<0.001*
	%	16	31	22	31		
3. Trouble falling or staying asleep, or sleeping too much	N	102	135	33	30	108.240	<0.001*
	%	34	45	11	10		
4. Feeling tired or having little energy	N	48	87	69	96	18.000	<0.001*
	%	16	29	23	32		
5. Poor appetite or overeating	N	66	111	87	36	40.560	<0.001*
	%	22	37	29	12		
6. Feeling bad about yourself or that you are a failure or have let yourself or your	N	93	81	45	81	17.280	<0.001*
	%	31	27	15	27		

| family down							
7. Trouble concentrating on things, such as reading the newspaper or watching television	N	93	54	81	72	10.800	0.013*
	%	31	18	27	24		
8.Moving or speaking so slowly that other people could have noticed. Or the opposite being so figety or restless that you have been moving around a lot more than usual	N	111	66	57	66	23.760	<0.001*
	%	37	22	19	22		
9.Thoughts that you would be better off dead, or of hurting yourself	N	93	96	60	51	20.880	<0.001*
	%	31	32	20	17		

Table 4 show that regarding Little interest or pleasure in doing things the most of participant in score 3 were(41.0%) X^2 54.720 and a significant relation were P=0.001, regarding feeling down, depressed, or hopeless the most of participant in between score 1 and3 were(31.0%, 31.0%) X^2 54.720 and a significant relation were P=0.001. regarding Trouble falling or staying asleep, or sleeping too much the most of participant in score 2 were(45.0%) X^2 108.240 and a significant relation were P=0.001, regarding Feeling tired or having little energy most of participant in score 3 were(32.0%) X^2 18.000 and a significant relation were P=0.001, regarding Feeling down, depressed, or hopeless Feeling bad about your-self or that you are a failure or have let yourself or your family down the most of participant in between score 0 were(31.0%) X^2 17.280 and a significant relation were P=0.001. regarding Thoughts that you would be better off dead, or of hurting yourself   most of participant in score 2 were) 32.0%) X^2 20.880 and a significant relation were P=0.001

Table 5 Distribution the relation of PHQ-9 of particular during COVID19 pandemic (Frequencies and percentages)

PHQ-9			
		N	%
Positive (PHQ-9>4)		201	67
Negative (PHQ-9<4)		99	33
Total		300	100
Chi-square	X^2	34.003	
	P-value	<0.001*	

Regarding the relation of PHQ-9 of particular during COVID19 pandemic the most of participant Positive (PHQ-9>4) were 67.0% while Negative (PHQ-9<4) and X^2 34.003 and a significant relation were P=0.001

**Figure (1) Distribution the relation of PHQ-9 of particular during COVID19 pandemic (Frequencies and percentages)**
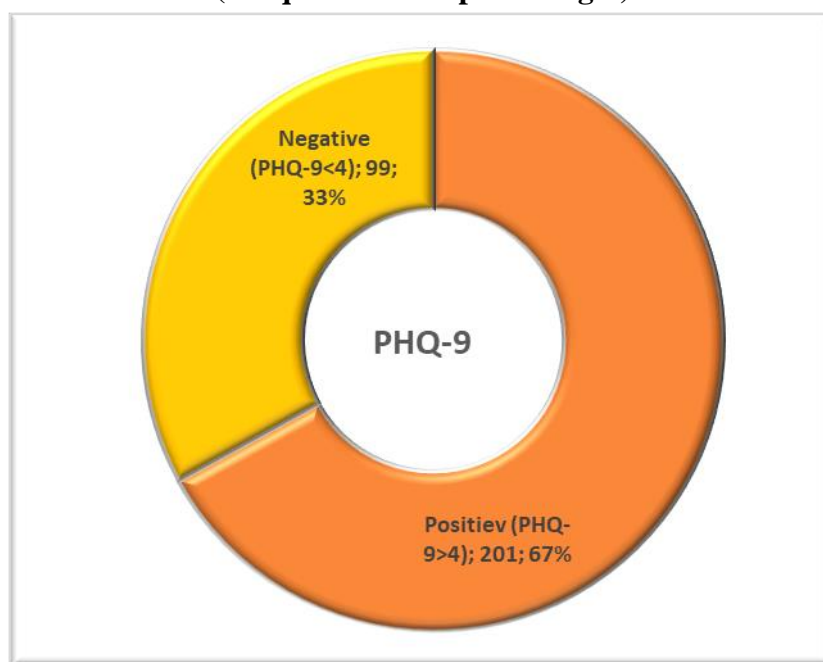
Table 6 distribution of the BMI category changes and PHQ-9 during the COVID-19 pandemic in participants

BMI	Total	PHQ-9			
		Positive		Negative	
		N	%	N	%
Underweight	96	35	17.41	61	61.62
Normal weight	36	17	8.46	19	19.19
Overweight	66	54	26.87	12	12.12
Obesity	102	95	47.26	7	7.07
Total	300	201	100.00	99	100.00
Chi-square	X^2	84.941			
	P-value	<0.001*			

Regarding the relation of BMI and PHQ-9 the most of participant positive underweight were (17.41%) regarding the Normal weight the most in negative were(19,19%) regarding obesity the most in Positive were 47.26%) and X^2 84.941 and a significant relation were P=0.001

Figure (3) distribution of the BMI category changes and PHQ-9 during the COVID-19 pandemic in participants
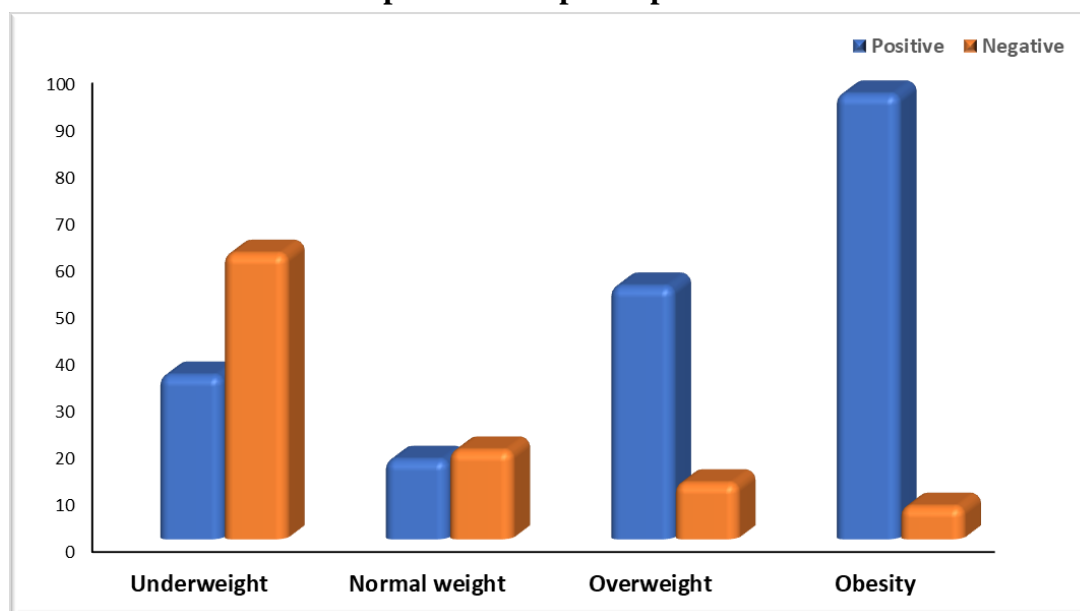
Discussion

The purpose of this study was to assess the Impact of COVID-19 virus on the obesity and depression on Children's at Saudi Arabia in Makkah Al-Mukarramah.

shows that most of the participants (39.0%) were in the age group 16 years follow by the (37.0%)were in the age <14 years, the majority of them were male (57.0%) while female(43.0%), regarding level of education the majority of participant are secondary school were(76.0%), regarding BMI category the majority of participant are obesity were(66.0%), Regarding the Chronic Medical conditions most of participant have diabetes were(29.0%) while Heart disease pressure were(22.0%), regarding Staying at home since COVID-19 most of participants Not going outside at all were(51.0%), regarding the Working/studying from home most of participants answer No were(58.0%)while answer Yes were(42.0%), Regarding the COVID-19 symptoms most of participant have very mild were(30.0%) . that the majority (41.0%) of the Individuals reported changes in mealtime during the COVID-19 to severe food follow by moderate food were(34.0%), also individuals reporting changes in the daily number of meals consumed during the COVID-19 to moderate food were(34.0%) follow by severe food were (27.0%) .(See Table 1)

Since the initial outbreak of COVID-19 disease in China, it has spread widely to various countries. According to the MOH update on the 20th of April 2020, the number of COVID-19 cases raised to 10,484 in Saudi Arabia [29]

This study found of depression symptoms in the in Saudi Arabia increased more than during the COVID-19 pandemic, from before COVID-19. To our knowledge, this is the first nationally representative study that assessed depression symptoms using the Patient Health Questionnaire–9 in in Saudi Arabia in Makkah Population before and during the COVID-19-pandemic.We found a shift in depression symptoms, with fewer people with no symptoms and more people with more symptoms during COVID-19 than before COVID-19. shows a significant positive higher levels of depression symptoms were observed during COVID-19

compared with before COVID-19 patients for each items in the score 1 and 3 were P-value=0.001 and also the total PHQ-9 (During COVID-19)a significant positive increase of depression symptoms were observed were P-value=0.001 .(see table 4)

We found similarly a 2020 study by Ni et al8 analyzed depression symptoms before and after political unrest in Hong Kong using the same measure of depression symptoms we deployed in this study[30]. They reported national depression symptoms prevalence before the unrest to be 6.5%(compared with 8.5%in our pre–COVID-19 US sample) and 11.2%in 2019 during unrest (compared with 27.8%in our during–COVID-19 sample). This suggests that the impact of COVID-19 on the US population may be substantially larger than that after other large-scale events. This may reflect the greater ubiquity of COVID-19 and its effects on the US population than prior recorded large-scale traumatic events. Our findings are consistent with studies in Asia showing a substantial burden of psychological distress following COVID-19.[31]

Also found similarly study confirms our results, as many of the participants (78.4%) reported changes in their sleep patterns. Female students were reported to be affected more severely with regards to their sleeping patterns and their psycho-emotional symptoms compared to males during the COVID-19 pandemic [32]

The anxiety/depression reported by our patients was strongly associated with weight gain and resulted in being the more relevant factor in predicting increase in body weight, after adjusting for consuming unhealthy foods. Furthermore, individuals with obesity are at increased risk of either chronic or acute diseases, including COVID-19 infection and complications, as suggested by growing evidence [33]. The increased risk is due to multiple factors in particular; excess ectopic fat might reduce both protective cardiorespiratory reserves, as well as potentiate the immune deregulation and pro-inflammatory response, and have detrimental effects on lung function [34]. Finally, the consumption of unhealthy diets has been proposed to adversely impact on susceptibility to COVID-19 and recovery [35]. Increasing weight might be a vicious circle leading to increased infection risk so that, now, obesity and COVID-19 infection can be considered two public healthy pandemics colliding [36]

Conclusion

Obesity might not directly cause depression in Children's in Saudi Arabia, but other pathways and experiences may lead to depression indirectly. Also, stressful life events such as the Covid-19 Pandemic, isolation activities and community support and predispose to depression and may be a factor that leads to an increase in obesity during Covid-19 Pandemic, should emphasize on continuity of health services and ways of implementing innovative interventions to meet the health and socioeconomic needs of the population people to minimize the long-term consequences of the pandemic. Strategies to sustain behaviors positively adopted among Children's people has been critical to reduce the Obesity during spread of COVID-19

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