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Stigmatisation of Obesity and its Relation to the Perception of Controllability in Riyadh, Saudi Arabia

A cross-sectional study

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Abstract

Objectives: This study assessed the stigmatisation of obesity among a sample of the general population in Riyadh and its association with the perception of controllability. ***Methods:*** A cross-sectional analytical study was carried out in Riyadh, Saudi Arabia, during January–February 2021 and included 384 participants who were recruited through a convenience sampling method. The data were collected using a self-administrated online questionnaire. Statistical analysis was performed using John's Macintosh Project Version 16.0.0. ***Results:*** Most of the participants had a low level of stigma towards obesity (72.8%), and gender and BMI were significantly associated with the level of stigma at (p = .0023) and (p = .0360) respectively. The association between the perception of controllable factors and the level of stigma was also significant (p = 0.0001). ***Conclusions:*** The data supported the hypothesis that there would be a significant association between stigmatisation on obesity and perception

of controllability among the general population in Riyadh City. Regarding recommendations, the authors suggest that they should be based on joint international consensus statements for ending the stigma of obesity in different settings and categories, and should include the education of healthcare service providers and obese patients on the relationships shown in the findings.
Keywords: Obesity, stigmatisation, perception

Advances in Knowledge

- There is a low level of stigmatisation of obesity among the general population of Riyadh.
- The characteristic of gender had a statistically significant association with the level of stigma towards obesity.
- The stigmatisation of obesity was significantly associated with a perception of controllability.

Application to Patient Care

- Policies are needed to prevent weight stigmatisation in different settings, including healthcare.
- Promoting better healthcare services to obese patients should include educating healthcare providers regarding stigmatisation in relation to controllability perceptions.
- The healthcare service provided to obese patients should include educational sessions on how to tackle stigmatisation incidents and the relation of stigmatisation to controllability perceptions in the attitudes of those holding those views

Introduction

Obesity is one of the most common and preventable public health issues affecting individuals of both genders and all ages worldwide.[1] The global prevalence of obesity has increased almost three times in the last four decades. In 2017, the World Health Organisation (WHO) estimated that 39% of adults are overweight and 13% are obese, while 18% of children and adolescents suffer from being either overweight or obese.[2] Being overweight or obese is defined by WHO as “abnormal or excessive fat accumulation that presents a risk to health. It is mainly measured by the body mass index (BMI) by dividing weight in kilograms by the

square of height in metres. BMI between 25–29 is considered overweight while BMI of 30 or more is considered obese". [2]

In Saudi Arabia (SA), in particular, the shift away from a traditional way of living to a Westernised lifestyle and the reduction of the level of physical activity were recognisable risk factors contributing to the growing numbers of individuals that are obese or overweight.[3] In 2014, 3.6 million Saudis who were 15 or above were obese, and the prevalence was approximately 24.1% for men and 33.5% for women.[1] . Being overweight and obese are associated with several health issues that lead to the development of other non-communicable diseases, such as diabetes, heart diseases, and cancer [2] , that increase mortality rates.[4] Therefore, obesity management is essential for non-communicable disease prevention and the promotion of quality of life.[5]

Historically, those who were overweight or obese were positively perceived in Saudi culture, as this was a symbol of high income and wealth for men and good fertility in women.[1] However, in recent years, obese people have been challenged by stigmatisation at a personal level because of their excess weight and shape.[6]. A stigma can be defined as "*the co-occurrence of labeling, stereotyping, separation status loss, and discrimination [in] a context in which power is exercised*".[7] More than 60 years ago, racial and ethnic discrimination was more prevalent in the world, while current statistics have demonstrated that obesity stigma is becoming more prevalent compared to similar attitudes regarding race and ethnicity.[8] This shift has been attributed to Westernisation and the idolisation of thinness[9], which is associated with recent social changes in Saudi Arabia.[10]

The stigmatisation of obesity has multiple negative effects on obese individuals, such as further weight gain and a deteriorated health status. Some medical ethicists believe that applying a weight stigma and pressuring overweight and obese individuals socially might discourage their attempts in weight management.[8] Overweight and obesity stigmatisation can create obstacles to an individual's daily activities, which can lead to depression, shame and guilt, social isolation, and lower work achievement.[5] A study was conducted in the United States with 13,692 heavy adults; of this total, 5,079 demonstrated dangerous consequences of weight stigma that can lead to increased mortality. People who reported experiencing weight discrimination had a 60% increased risk of dying for several reasons, including poor health care services or alcohol and substance abuse.[8]

Weight stigma leads individuals to develop a distorted and dysfunctional image of themselves, especially when they are unable to manage their weight. Therefore, this discrimination can create a variety of mental health issues, including affecting attitudes[8] and creating an increased risk of experiencing depression, low self-esteem, and low quality of life.[11] A study conducted in a university in the north-eastern United States found that people had negative feelings, such as disgust, towards overweight and obese people.[12] There is also new scientific evidence that estimates increases in weight gain and reductions in metabolic rate due to weight stigma.[6] Over the last 10 years, the United States has reported higher numbers of weight discrimination in the past decade. Unfairness because of weight stigmatisation has been reported in employment, educational, and even health care settings. Employers have described multiple stereotypical attitudes against overweight and obese workers, such as in hiring, salary levels, and receiving promotions. In 2006, a study conducted in the United States of more than 2,000 participants reported that 25% of those of heavy weight had faced job discrimination.[6] Furthermore, another study showed that more than half (54%) of employees were subject to weight stigmatisation from their colleagues at work, and 43% reported stigmatisation from their supervisors because of their weight.

In healthcare settings, patients who are obese or overweight can also be affected by situations that involve a weight bias. In addition, negative attitudes from health care professionals, such as physicians, nurses, psychologists, and medical students, towards their obese patients have been registered. They have commonly stereotyped obese patients as lazy, uncommitted, and lacking the power to control their weight.[6]

Research on educational environments regarding this topic is less prominent than what has been conducted in healthcare and employment environments. Students who are overweight or obese in educational settings are often stigmatised by their peers, teachers, or even their parents.[6] A nationwide study in Saudi Arabia that included 4,709 participants revealed that the stigmatisation of obesity prevalence is 46.4%.[13].Another study including 1,459 participants found that obese people in Saudi Arabia face stigmatisation that is manifested in different forms, including primarily negative behaviours (25.6%), bad comments (25.4%), and physical barriers (25.2%).[14] Interestingly, Khodari, et al. [15] recently explored weight self-stigma in Jazan (in the Southern Region of Saudi Arabia) and demonstrated that it was positively associated with BMI.

The attribution value model was developed by Weiner [16] and may provide a plausible explanation of stigmatisation towards a given person or group of people. Weiner [17] suggested that antipathy towards a specific group is the result of believing that this specific group can control their own behaviours. In the context of those who are overweight and obese, evidence has confirmed that weight stigma has increased rates of association with attributions of trying to control a person's weight.[18] Attribution theory tries to explain why people behave in a certain way against a specific group based on their perceptions of the controllability of that group.[17] To manage the problem of the obesity epidemic, it is obligatory to address this other aspect of the epidemic, which is weight stigma attitudes.[8] Indeed, when stigmatisation is decreased, it will improve the overall quality of life and minimise mental health issues among obese people by removing stereotypes, discrimination, and prejudices.

The existing literature regarding the stigmatisation of obesity in SA is scarce, mainly focusing on body image and preferences and the effect of stigma. This is a limitation, even if obesity as a public health problem is exhaustively investigated in SA. The present study's uniqueness comes from its attempt to understand the root cause of stigmatisation by using the attribution-value model to assess obesity stigma and its relation to a perception of controllability. Our hypothesis is that there will be a significant association between stigmatisation of obesity and perception of controllability among the general population in Riyadh City.

Methods

This cross-sectional analytical study was carried out in Riyadh City (SA) during January–February 2021. Inclusion criteria included Saudi and non-Saudi individuals of both genders who were residents of Riyadh City and 18 years old and above. A non-probability, convenient sampling technique was used. A brief introduction about the aim of the research and the target population, along with a link to the first page of the electronic questionnaire, was distributed through social media applications, such as WhatsApp and Telegram. The sample size was calculated manually with a 95% confidence interval multiplied by a design effect of one. The prevalence of stigma was estimated to be 50%, and the total population under study was above 10,000. After adding 10% to account for any incomplete data, the necessary sample size was calculated to be 422 participants. The actual collected sample was 533 participants; eight participants were excluded because they were under 18 years old.

The self-administrated online questionnaire was hosted by Microsoft Forms, which was used for data collection. The questionnaire was distributed in both the Arabic and English languages. The questionnaire was developed and validated as described later, guided by the Obese Stereotypes and Causes of Obesity Scale[14] and the Anti-fat Attitudes Test (AFAT).[15]The tool consisted of three sections. The first section included nine questions about sociodemographic characteristics: gender, age, nationality, level of education, marital status, monthly income, workplace, height (m), and body weight (kg). The last two were used for body mass index (BMI) calculations. Participants were then categorised based on the WHO guidelines[16]: Underweight, <18.50 kg/m^2; Normal, 18.50–24.99 kg/m^2; Overweight ≥25.00 kg/m^2; and Obese ≥30.00 kg/m^2. The BMI could not be calculated for 14 of the participants, as they did not provide the required information.

The second section assessed obesity stereotypes and social, character, physical and romantic, and attractiveness aspects, along with weight control. It consisted of 20 questions, which were assessed based on a five-point Likert scale. The highest score of 5 was given to "strongly agree", and the lowest of 1 was given to "strongly disagree". One question was scored in reverse ("obese people are just as competent in their work as anyone else"). by which a score of 1 was given to "strongly agree" and a score of 5 to "strongly disagree". The highest possible score was 100, and the lowest was 20. Data were interpreted based on percentages in which respondents with scores between 20.0 and 46.6 were categorised as having low stigma. Respondents who scored 46.7 to 73.3 were categorised as having moderate stigma. Finally, those who scored 73.4 or higher were categorised as having a high level of stigma.

The last section assessed the controllability of obese individuals. It consisted of six questions, which were assessed based on a five-point Likert scale. The first three questions were scored with 5 as "strongly agree", and 5 as "strongly disagree". The last three questions were reversed: "strongly agree" was scored as 1, and "strongly disagree" was scored as 5. The highest possible score for this section was 15. and the lowest was 3. The scores were divided into high, moderate, and low levels of controllability. Respondents with a score between 3 and 6 were categorised as having low levels of controllability. Respondents who scored 7 to 10 were categorised as having moderate levels of controllability, and those with scores of 11 to 15 were categorised as having high levels of controllability.

A pilot study was planned to include 10% of the estimated sample size, which was 43 individuals; it was actually completed by a group of 45 residents of Riyadh. The pilot took place in January 2021 to test the clarity and feasibility of the questionnaire. Three questions were reported to be vague by the pilot participants, and they were modified for clarity. The face validity was tested in terms of layout, feasibility, and the clarity of wording. Moreover, the questionnaire was validated by experts in the fields of nutrition and public health. Reliability was assessed using Cronbach's alpha. Test section two showed high reliability with a score of $\alpha = .8500$. Section three showed acceptable reliability with $\alpha = .6519$ after excluding three questions.

The data were coded and analysed using JMP, Version 16.0.0 (SAS Institute Inc., Cary, NC, 1989-2021). Descriptive data are presented in frequency tables as numbers and percentages. The data were analysed according to the type of measure; categorical variables were presented in frequency tables and graphs. Associations between two categorical data variables were tested using the chi-square test of two independent samples. A *P*-value <0.05 was considered as the cut-off point for significance.

Ethical approval was obtained from the Institutional Review Board (IRB) at xxx (Number xxx). The research was performed in accordance with relevant guidelines/regulations. Informed consent was confirmed on the first page of the questionnaire before the respondents answered any part of the questionnaire. Participation in the research was voluntary, the data were confidential, and there was no expected harm or risk to the participants.

Results

Table 1 summarises the characteristics of the study sample (N = 525). Female participants represented 62.7% of the study sample. Participants aged 18–28 years constituted 41.9 % of the sample. Most of the participants were Saudis (95.8%), and almost half were married (53.0%). In terms of education and employment, 68.6 % reported that they had a bachelor's degree, and 37.3% were unemployed. As for monthly income, 47.6% reported earning less than 8,000 SAR. Finally, based on the height and weight values provided by the respondents, the BMI values were calculated for 510 individuals. More than half were either overweight or obese (33.1% and 24.7 %, respectively). More than one-third had a normal BMI (36.9%), and only 5.1% were underweight.

Table 2 shows that most of the participants had a low level of stigma (72.8%) and only two participants showed high level of stigma (.04%). Slightly more than half (51.8%) and more than one-third (35.4%) of the participants had moderate or high levels of perception of controllable factors towards obesity, respectively.

Table 3 displays the association between the level of stigma towards obesity and the sociodemographic characteristics of the studied sample. As the category of high stigmatisation was of only shown in 0.4% of the sample which does not provide good implications about the study analysis capability. A category of moderate to high was created and the associations were calculated for two categories. Characteristics which are significantly associated with stigma are gender (p = .0023) and BMI (p = .0360).

Table 4 shows that more than half of the participants who had a high level of perception regarding controllability also had a low level of stigma. There was a significant association between the perception of controllable factors and the level of stigma (p = .0001).

Table 5 displays a multivariate logistic regression to assess which factors successfully predict intention. Being a female was a negative predictor of stigma while being overweight and with high perception of controllability positively predicted stigma.

Discussion

This study assessed the stigmatisation of obesity and its relation to the perception of controllability among a sample from the general population in Riyadh City. The research findings support the hypothesis, as there was a significant association (p = .0001) between stigmatisation of obesity and perception of controllability. Slightly less than one-third of the participants had moderate stigma, and most of the participants demonstrated a low level of stigma. This result is in concordance with previous findings showing that weight stigma of a mild form was observed among the general public in Riyadh.[19]

In the United States over the past decade, discrimination regarding obesity has increased by approximately 66% compared to other forms of discrimination, such as those related to race.[20] This can be attributed to the fact that weight stigma is often considered normal behaviour in society. Also, some people think that it is humorous and acceptable to share

jokes about obese individuals. Moreover, TV and other media often present negative stereotypes about obese individuals, such as they are lazy and irresponsible.[14]

The present study confirms that gender had a significant relationship with stigma, in which males showed more stigma towards obesity compared to females. In fact, the multiple logistic regression model showed that being female is a negative predictor of stigma. In agreement with the current study's finding, Flint, et al. [21] reported that males had significantly more stigma towards obesity than females in the UK ($p < 0.05$). Similarly, Turkish male university students had a higher stigma towards obese people compared to females.[22] Taken together, this result might be attributed to societal pressures that females face regarding how a female body shape should look, which affects their emotions; thus, females tend to be more caring of others' feelings when it comes to physical appearance.[23] This study showed that 44.2% of those with low stigma were in the age range of 18–28 years. This could be explained by the fact that this young age group tends to be more knowledgeable about the negative effects of the stigmatisation of obese people. However, these findings are different from those demonstrated by Jackson, et al. [24], which indicated that younger age groups have higher rates of weight discrimination.

This study found that BMI was significantly associated with stigma (p=0.0360) in which being overweight specifically positively predicted stigma. 38.6% of those with moderate to high stigma were of normal weight and 39.3% of those with moderate stigma were overweight; only 20.7% of those with moderate stigma were obese. A study conducted in the United Kingdom found that individuals who were underweight or overweight had higher stigmatisation rates than other BMI groups.[21]

According to the results of the present study, 20.6% of the participants had a high perception of controllability regarding obesity and a low obesity stigma. In addition, the level of stigma was significantly associated with the perceptions of controllability regarding obesity. The multiple logistic regression model found that being overweight was a positive predictor of stigma. This could be explained by attribution theory, which discusses how weight stigma increases when the factors are controllable and decreases when the factors are uncontrollable.[18] This result supports the study published by Khan, et al. [25] These authors revealed that when people know that the cause of obesity contains uncontrollable factors, such as genetics, they express low stigma and are highly empathetic towards obese people.

However, when they know that the cause contains controllable factors, such as behaviour, they highly express stigma and have low empathy towards obese people.

The strength of this study is that it is theoretically based. In terms of limitations, as the sampling technique was based on a non-probability convenience technique, the results may not be generalisable, although the study findings are of importance, as they provide an explanation of one of the root causes of obesity stigmatisation. Another limitation of the study could be the self-reporting of anthropometric measurements by the participants, which could affect the accuracy of BMI categorisation. However, Allison, et al. [26] indicated that the categorisation of BMI based on such values was more precise than using continuous values of BMI when self-reported measures are used in health-related interventions. This was the case in our study.

Conclusion

In conclusion, this research supported the hypothesis stating that there was a significant association between stigmatisation of obesity and a perception of controllability among the general population in Riyadh City, based on this particular sample. As for recommendations, the authors suggest that they should be based on joint international consensus statements for ending the stigma of obesity [27] in different settings and categories. At the research level, conducting additional research in other cities in SA can provide a more holistic insight into whether stigmatisation possibly influences obese people. At the community level, it is highly recommended to establish strong policies that set a primary goal of filling the gap between public health efforts and the general population regarding settings in which weight discrimination occurs, such as healthcare, education, and workplaces. For example, in healthcare settings, individuals who are trained to treat obese people should be concerned and encourage them to seek medical help and also shift their attributions in messages from focusing solely on diet and exercise ("calories in and calories out") that can be controllable factors for people to include other attributions that can be uncontrollable. It is important to understand the etiology of obesity rather than just the traditional approach to obesity management.

Conflicts of Interest

The authors declare no conflict of interests.

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Author Contributions

All authors substantially contributed to the design of the study. NF, SAA and SHA collected the data, performed the statistical analysis and literature review. All authors participated in the interpretation of the results and drafting the manuscript. FA, NB and MA revised the manuscript and edited the English. All authors approved the final version of the manuscript.

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Table 1: Sociodemographic characteristics of the studied sample (n = 525)

Sociodemographic characteristics	N (%)
Gender	
Female	329 (62.7)
Male	196 (37.3)
Age (years)	
18–28	220 (41.9)
29–39	156 (29.7)
40 and above	149 (28.4)
Nationality	
Saudi	503 (95.8)
Non-Saudi	22 (4.2)
Marital status	
Married	278 (53.0)
Not married	247 (47.0)
Level of education	
Less than high school	16 (3.0)
High school or diploma	87 (16.6)
Bachelor's degree	360 (68.6)
Higher education	62 (11.8)
Workplace	
Unemployed	196 (37.3)
Government sector	165 (31.4)
Private sector	120 (22.9)
Freelance	13 (2.5)
Retired	31 (5.9)
Monthly income (SAR)	
< 8,000	250 (47.6)
8,000–16,000	180 (34.3)
> 16,000	95 (18.1)
BMI categories (n = 510)	
Underweight	26 (5.1)
Normal weight	188 (36.9)
Overweight	170 (33.3)
Obese	126 (24.7)

SAR = Saudi Riyals,

BMI categories: Underweight, <18.50 kg/m2; Normal, 18.50–24.99 kg/m2; Overweight ≥25.00 kg/m2; and Obese ≥30.00 kg/m2

Table 2: Level of stigma and controllability toward obesity in the studied sample (n = 525)

	N (%)
Level of stigma (score range)	
Low (20.0–46.6)	382 (72.8)
Moderate (46.7–73.3)	141(26.9)
High (73.4–100.0)	2 (0.4)
Level of controllability (score range)	
Low (3–6)	67 (12.8)
Moderate (7–10)	272 (51.8)
High (11–15)	186 (35.4)

Table 3: Association between level of stigma toward obesity and sociodemographic characteristics of the studied sample (n = 525)

	Level of stigma		
	Low (n = 382) N (%)	**Moderate to high (n = 143) N (%)**	***P*-value**
Gender			
Male	127 (33.3)	74 (51.8)	
Female	255 (66.8)	69 (48.3)	**0.0023***
Age (Years)			
18–28	169 (44.2)	51 (36.2)	
29–39	106 (27.8)	50 (35.0)	
40 and above	107 (28.0)	42 (29.4)	0.1558
Nationality			
Saudi	366 (95.8)	137 (95.8)	
Non-Saudi	16 (4.2)	6 (4.2)	0.1487
Marital status			
Married	200 (52.4)	78 (54.6)	
Not married	182 (47.6)	65 (45.5)	0.6948
Level of education			
Less than high school	12 (3.1)	4 (2.8)	
High school/diploma	62 (16.2)	25 (17.5)	
Bachelor's degree	263 (68.8)	97 (67.8)	
Higher education	45 (11.8)	17 (11.9)	0.9844
Workplace			
Unemployed	151 (39.5)	45 (31.5)	
Government sector	117 (30.6)	48 (33.6)	
Private sector	84 (22.0)	36 (25.2)	
Freelance	7 (1.8)	6 (4.2)	
Retired	23 (6.0)	8 (5.6)	0.2938
Monthly income (SAR)			
< 8,000	185 (48.4)	65 (45.5)	
8,000–16,000	129 (33.8)	51 (35.7)	
> 16,000	68 (17.8)	27 (18.9)	0.3372
BMI cat. (n = 510)	**(n = 370)**	**(n = 138)**	
Underweight	24 (6.5)	2 (1.4)	
Normal weight	134 (36.2)	54 (38.6)	
Overweight	115 (31.1)	52 (39.3)	
Obese	97 (26.2)	28 (20.7)	**0.0360***

SAR = Saudi Riyals

BMI categories: Underweight, <18.50 kg/m^2; Normal, 18.50–24.99 kg/m2; Overweight ≥25.00 kg/m2; and Obese ≥30.00 kg/m2

P-value is calculated using the chi^2 test.

Table 4: Association between stigmatisation level and its relation to perception of controllability (n = 525)

Level of controllability	Level of stigmatisation of obesity		*P*-value
	Low	Moderate to high	
Low	59 (15.5)	8 (5.6)	0.0001*
Moderate	215 (56.3)	57 (39.9)	
High	108 (20.6)	78 (54.6)	
Total	382 (72.8)	143 (26.9)	

P-value is calculated using the chi^2 test.

Table 5: Multiple logistic regression with Gender, nationality, BMI, and controllability

Parameter estimates					
Term		**Estimate**	**Std Error**	**ChiSquare**	**Prob>ChiSq**
Intercept		-1.5291252	0.3361126	20.07	<.0001*
Gender	**Female**	-0.2397304	0.1066013	5.06	0.0245*
Nationality	**Saudi**	0.04284096	0.2654482	0.03	0.8718
BMI	**Normal weight**	0.42743278	0.2358471	3.28	0.0699
	Overweight	0.53475875	0.2387129	5.02	0.0251*
	Obese	0.11420282	0.2561442	0.20	0.6557
Controllability	**Low**	-0.7423099	0.2635433	7.93	0.0049*
	High	0.85041049	0.1707867	24.79	<.0001*