

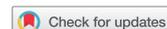
Weight bias and eating behaviours of persons with overweight and obesity attending a general medical practice in Durban, South Africa

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Background: The consequences of obesity for physical health and non-communicable illnesses are well established, but the impact on psychosocial well-being in persons with obesity is much less understood. This study aimed to assess psychosocial constructs such as weight bias affecting the eating behaviours of persons with overweight and obesity attending a general practice in South Africa

Methods: An observational study was conducted at a private general medical practice situated in a peri-urban area of Durban, KwaZulu-Natal, South Africa. A sample of 100 persons with overweight and obesity, and with a BMI ≥ 25 kg/m², were recruited by a convenience sampling method. Frequency tables for BMI, sociodemographic factors, perceptions and eating behaviours were described. Spearman's rank-order correlation was run to assess the relationship between sociodemographic factors, perceptions, knowledge, attitudes and eating behaviours.

Results: About 90% were below 60 years and 83% were females. The mean BMI of males was 41.7 kg/m² (SD = 7.38) and of females was 39.9 kg/m² (SD = 7.91). It was found that weight stigma (are overweight people discriminated against) and the average household income were associated with abnormal eating behaviours such as compulsive eating, obsession with eating and psychological problems. A significant correlation was demonstrated between 'Are people with overweight discriminated against?' and abnormal eating behaviours such as compulsive eating ($p = 0.049$), obsession with eating ($p = 0.009$) and psychological problems ($p = 0.051$)

Conclusion: Psychosocial factors such as weight bias affect the eating behaviours of persons with overweight and obesity in South Africa. Research should be done exploring promotion of the psychosocial well-being of patients while trying to manage their obesity.

Keywords: abnormal eating behaviour, Obesity, psychosocial, South Africa, weight discrimination, weight bias

Background

Obesity is widely considered as a chronic disease associated with stigmatisation and discrimination^{1,2} and has long been regarded by the general public as a consequence of personal choices. However, depending on weight perceptions by society and persons living with obesity, obesity may represent a positive image^{3–5} or a disadvantaged social position^{6,7} and weight bias is influenced by complex values and beliefs that are dependent on national and cultural context.⁸ Weight bias is defined as negative attitudes, beliefs and judgements towards persons based on their body size.⁷ Weight bias can be differentiated into weight prejudice and weight discrimination,^{9,10} with weight prejudice reflecting attitude, and weight discrimination evidenced by behaviour patterns.^{11,12} Weight bias, weight stigma and weight prejudice are terms that have been used interchangeably, particularly when describing individuals based on their bodyweight. Although weight discrimination and prejudice are practised within societies,¹³ internalised weight bias will give us a better understanding of this complex and multilevel interaction.¹⁴ Studies have shown that individuals with obesity often face psychosocial obstacles such as weight stigmatisation within the family and society,^{11,15} including their own beliefs about themselves, triggering a range of negative outcomes including disordered eating behaviours.¹⁶ In a recent study from a country in Western Europe it was found that 18.7% of people with obesity experienced stigma and for people with severe obesity the outcome was much higher at 38%.¹⁷ Research involving the United States,

Canada, Iceland and Australia showed similar levels of weight-biased attitudes across these countries.¹⁸ Research in Africa,^{19,20} particularly in South Africa, has shown that persons with obesity can have a positive body image and acceptance of their large body size.^{3–5} The psychological pathways underlying these negative and positive associations are not well understood.^{21,22}

With the end of apartheid, South Africa experienced a social and economic transformation, and these were the driving factors for the increasing prevalence of obesity, more so among black South African women.²³ In a national study in South Africa in 2016, based on BMI score, two-thirds (68%) of all women were overweight or obese, and in contrast just under one-third of men (31%) were overweight or obese, with one in five women (20%) in the severely obese category; and only 3% of men severely obese.²⁴ Severe obesity was most common among coloured (mixed ancestry) and black/African women (26% and 20%, respectively) and the reported increases were due to increasing wealth quintile.²⁴ The stigma of HIV/AIDS and the positive body image, symbolising health, beauty, wealth and happiness was so strong that it had shaped cultural beliefs, particularly among black females.^{3–5,25} Despite this positive acceptance, persons with obesity still face weight bias, weight prejudice, stigmatisation and discrimination,^{7,12,26} including social exclusion and inequities.²² Thus, both the positive and negative psychosocial impact on obesity should be assessed and integrated into multidisciplinary interventions on weight

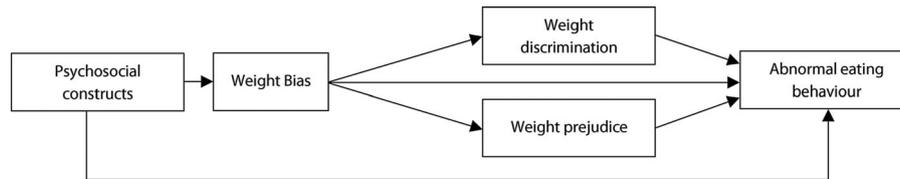


Figure 1: Theoretical framework.

management. The purpose of this study was to assess the impact of psychosocial constructs, specifically personal weight bias, weight prejudice and weight discrimination and their effect on eating behaviours of overweight and obese individuals in South Africa (Figure 1).

Methods

This is a cross-sectional study of 100 consecutive participants with overweight and obesity attending a private family practice in a suburban area, north of Durban, KwaZulu-Natal, South Africa, and staffed by the principal investigator of this study. A family practice was deemed to be an ideal site for the study as participants would have had the opportunity to develop a trusting relationship with the principal investigator. The data collected were part of a Master's dissertation and have been described in detail elsewhere.⁵ The ethnic composition of the patients attending the family practice represented a heterogeneous, multi-ethnic and multicultural suburban population. It represented the ethnic demography described in the 2011 census for the province of KwaZulu-Natal, which comprised 86.81% Black African, 7.37% Indian, 4.18% White, 1.38% Coloured (mixed ancestry) and 0.26% Other.²⁷ Similarly, the family practice patient population comprised 64% Zulu, 30% of Indian origin and the remaining 6% were White, Coloured, Swazi and Xhosa.⁵

Using a convenience sampling method, 100 participants with a BMI ≥ 25 kg/m² who attended the practice and signed their informed consent were voluntarily recruited. To ensure standardisation, a single researcher administered to the participants between March and April 2014 the questionnaire that had been developed.

The questionnaire was developed following a review of the literature on overweight and obese persons' perceptions, attitudes, knowledge and eating behaviour.^{28,29} The six topics in the questionnaire were based on previous studies on overweight and obese participants and included demographic profile (BMI, age, gender, education level, ethnicity, occupation, average household income, running water at home, electricity at home); perceptions of, knowledge of, and attitudes to obesity; eating patterns; dietary patterns; lifestyle choices, and chronic illnesses. In addition three additional topics identified from the self-reported questionnaire were *sociodemographic characteristics* (age, gender, educational level, and average household income); BMI of the study participants; *perceptions* (If you know you are obese, is it because of choice, pressure from your partner, fear of HIV stigma or your culture regarding obesity as a sign of wealth and marital bliss? [Perceived reasons for obesity]; Does being overweight affect your sexual and personal relationship with your partner? Do you think that you are discriminated against because of being fat?); *knowledge* (Do you think that obesity is a health risk? Family history of obesity); *attitudes* (Have you tried to lose weight? Are you happy with your weight?) and *eating behaviour* (Are you inclined to binge often without being able to stop? Do you have a

problem with compulsive eating [Meaning all the time/ anytime]? Do you feel you have an obsession with eating [Meaning that you never stop thinking about food or what you are going to eat next]? Do you suffer from any psychological, psychiatric or emotional problem?) The questionnaire was reviewed by two additional family medicine specialists and pilot-tested for duration, clarity and suitability. Necessary modifications to shorten duration and improve clarity were made without compromising the quality of data collection on the various themes already outlined.

Ethical considerations

Ethical approval was obtained from the Biomedical Research Ethics Council (BREC) in affiliation with the

University of KwaZulu-Natal. Full approval to conduct the study was granted (reference BE 239/13). Anonymity of participants was maintained throughout the study period and no personal identification details were included in data collection.

BMI classes³⁰

BMI was calculated as weight divided by height squared (kg/m²). Commonly accepted BMI ranges are those recommended by the World Health Organization: overweight (BMI 25–30 kg/m²), obese class I (BMI 31–35 kg/m²), obese class II (BMI 36–40 kg/m²) and obese class III (≥ 41 kg/m²) (WHO.) In addition to these standard BMI categories, individuals with class III obesity were further divided into three categories, BMI 41–45 kg/m², BMI 46–50 kg/m² and BMI > 50 kg/m².

The data were coded and captured in Microsoft Excel (Microsoft Corp, Redmond, WA, USA) and then transferred into the Statistical Package for the Social Sciences (SPSS version 25; IBM Corp, Armonk, NY, USA) for analysis. Categories were meaningfully combined when indicated. Descriptive analysis of the sociodemographic and psychological factors was done. Spearman's rank-order correlations were run to assess the relationship between psychological eating behaviour and the perceptions and knowledge of obesity and sociodemographic factors. Preliminary analysis showed the relationship to be monotonic, as assessed by visual inspection of a scatterplot.

Results

Table 1 describes the sociodemographic characteristics of the participants. The sample comprised 100 overweight and obese participants of which close to 90% were under 60 years of age and 83% were females. The ethnic distribution of the participants was 64% Zulu and 30% of Indian origin with the remaining 6% being White, Coloured (mixed ancestry), Swazi and Xhosa. Around 94% of the study population had a BMI > 30 kg/m². The mean BMI of males was 41.7 kg/m² (SD = 7.38) and of females was 39.9 kg/m² (SD = 7.91). Among the total participants, 79 had either a grade 12 or a tertiary qualification.

Table 1: Sociodemographic characteristics of the participants

Item	(%)
Age: <i>n</i> = 99	
18–30	24.2
31–40	19.2
41–50	26.3
51–60	20.2
> 60	10.1
Male gender <i>n</i> = 17	17.0
Female gender <i>n</i> = 83	83.0
BMI: <i>n</i> = 99	
25–30	6.1
31–35	30.3
36–40	24.2
41–45	18.2
46–50	12.1
> 50	9.1
Educational level: <i>n</i> = 100	
No education	1.0
Primary	18.0
Matriculation	39.0
Tertiary	40.0
Other	2.0
Average household income per month: <i>n</i> = 99	
< R2 000	21.2
R2 000–R5 000	17.2
R5 000–R10 000	24.2
> R10 000	37.4

BMI: Body mass index; R: South African Rand; *n* < 100 (missing data).

Table 2 describes the frequency results of the psychosocial determinants and eating behaviours. Nearly 90% of the study population stated that their body size was a personal choice and this result should trigger clinical concerns. More than half of the participants noted that their obesity affected intimacy with their partner and 77% stated that they were discriminated against for being obese (Table 2).

Table 3 depicts Spearman's correlation between the sociodemographic characteristics and constructs of weight bias. Gender had a statistically significant relationship with overweight people being discriminated against and the effect of obesity on personal and sexual relationships.

Table 4 shows the correlations between sociodemographic factors and eating behaviours. Significant correlations between sociodemographic factors and obsessive eating behaviour were demonstrated. Table 5 looks at the correlations between weight perceptions and eating behaviours. A significant correlation was demonstrated between 'Are people with overweight discriminated against?' and abnormal eating behaviours. A significant correlation was demonstrated between 'Are people with overweight discriminated against?' and abnormal eating behaviours such as compulsive eating ($p = 0.049$), obsession with eating ($p = 0.009$) and psychological problems ($p = 0.051$).

Discussion

This study aimed to assess psychosocial constructs such as weight bias affecting the eating behaviours of persons with

Table 2: Frequency results on perceptions, knowledge, attitudes and eating behaviour

Item	(%)
Perceived reason for obesity: <i>n</i> = 81	
By choice	87.7
Wealth and happiness	1.2
HIV stigma	1.2
Pressure from spouse	9.9
Did you consider obesity a health risk? <i>n</i> = 99	
Yes	86.9
No	11.1
Do not know	2.0
Are you happy with your weight? <i>n</i> = 100	
Yes	15.0
No	83.0
Do not know	2.0
Have you tried to lose weight? <i>n</i> = 100	
Yes	83.0
No	17.0
Do not know	0.0
Effect of obesity on personal and sexual relationships: <i>n</i> = 96	
Yes	53.1
No	39.6
Do not know	7.3
Are overweight people discriminated against? <i>n</i> = 100	
Yes	77.0
No	21.0
Do not know	2.0
Abnormal eating behaviours:	
Binge eating <i>n</i> = 96	
Yes	25.0
No	75.0
Do not know	0.0
Compulsive eating: <i>n</i> = 100	
Yes	9.0
No	89.0
Do not know	2.0
Obsessive eating: <i>n</i> = 100	
Yes	9.0
No	91.0
Do not know	0.0
Psychological problem: <i>n</i> = 100	
Yes	35.0
No	64.0
Do not know	1.0

overweight and obesity in South Africa. The findings in this study present some contrasting results from previous studies in South Africa surrounding participants' perceptions regarding weight/size. The findings underscore the necessity for further research, particularly around personal or internalised weight bias as a barrier to weight loss. A growing body of evidence shows that weight bias can have negative consequences leading to psychological impacts (such as internalised weight bias)³¹ and behaviours (such as abnormal eating behaviours).¹⁶ Although this study may show some correlations, the mechanisms underpinning these results is beyond the scope of this research.

Table 3: Correlations between sociodemographic factors and constructs of weight bias

Item	Age	Gender	Education Level	Average household income	Are you happy with your weight?	Have you tried to lose weight?	Are overweight people discriminated against?	Effect of obesity on personal and sexual relationships
Age	10.000	-0.137	-0.212*	-0.046	-0.030	0.038	0.062	-0.177
Gender	-0.137	0	0.256*	-0.043	-0.078	0.063	-0.001	0.004
Education Level	-0.212*	0.256*	10.000	0.482**	-0.034	0.113	-0.216*	-0.050
Average household income	-0.046	-0.043	0.482**	1.000	0.070	-0.060	-0.143	-0.169
Are you happy with your weight?	-0.030	-0.078	-0.034	0.070	1.000	-0.121	0.059	0.021
Have you tried to lose weight?	0.038	0.063	0.113	-0.060	-0.121	1.000	0.124	0.152
Are overweight people discriminated against?	0.062	-0.001	0.113	-0.060	0.059	0.124	1.000	0.254*
Effect of obesity on personal and sexual relationships	-0.177	0.004	-0.050	-0.169	0.021	0.152	0.254*	1.000

Numbers represent Spearman's rank correlation coefficient value. * $p < 0.05$ level; ** $p < 0.01$ level.

We found that weight stigma (Are overweight people discriminated against?) and the average household income was associated with abnormal eating behaviours such as compulsive eating, obsession with eating and psychological problems. The relationship between weight stigma and abnormal eating behaviours has been supported in other studies.^{6,16,32} Significantly, there is a negative correlation between the household income and eating behaviours and this may mean that the poorer one is, the more likely are abnormal eating behaviours. A previous study also concluded that females of lower socioeconomic status exhibited more signs of disordered eating behaviour.³³

When asked about their weight perceptions, most of the participants (83%) were unhappy with their weight and 77% felt discriminated against. This negative feeling toward their own bodyweight is described as internalised weight bias. This phenomenon has been researched and refers to the extent to which people accept and believe something as being true of themselves.¹² This is associated with negative outcomes including poor body image and abnormal eating behaviour, as shown in this study and elsewhere.¹²

Although not happy with their weight and having tried to lose weight, the results showed that our participants made a

personal choice to be obese. Research has shown that persons with a much higher level of internalised weight bias are likely to cope by refusing to diet, overeating or they display disordered eating behaviour¹² and the participants in this study seemed to have coped with weight bias in a similar way. These results further allude to the complexity of psychological functioning in persons with obesity. Studies have shown that the more individuals have negative weight experiences, the more likely they are to resort to maladaptive coping mechanisms.¹² Obesity and weight regain may be associated with emotional consequences, as seen in some of the results in this study, and individuals with obesity are more likely to be blamed when they are perceived to be personally responsible for their weight gain.¹¹ The link between perceptions of personal responsibility for obesity and weight bias has been convincingly demonstrated by Puhl *et al.*³⁴

Our results show that South Africans do consider obesity a health risk and participants are attempting to lose weight on their own but are failing to do so. Weight programmes advocating that persons eat less and exercise more are not enough because our participants have tried this before without success. These results are clinically significant and should alert healthcare professionals in weight management like a red flag.

Table 4: Correlations between sociodemographic factors and eating behaviours

Eating behaviours	Abnormal eating behaviours			
	Binge eating	Compulsive eating	Obsessive eating	Psychological Problem
Sociodemographic:				
BMI	0.153	0.085	0.07	-0.102
Age	0.132	-0.118	-0.230*	-0.102
Gender	0.017	0.049	0.049	0.109
Education level	0.040	-0.194	-0.245*	-0.083
Average household income	0.093	-0.324*	-0.259*	-0.034
Family history of obesity	0.086	-0.029	0.043	0.086

BMI: body mass index. Numbers represent Spearman's rank correlation coefficient value. * $p < 0.05$.

Table 5: Correlations between weight perceptions and eating behaviours

Item	1*	2*	3*	4*	5*	6*	7*	8*	9*	10*
1. Reason for obesity (by choice, pressure from partner, HIV stigma, wealth)	1.000	-0.012	0.261*	0.171	0.033	0.042	0.208	0.074	0.115	0.193
2. Are you happy with your weight?	-0.012	1.000	0.021	0.059	-0.121	0.101	-0.059	0.070	-0.018	-0.030
3. Effect of obesity on personal and sexual relationships	0.261*	0.021	1.000	0.254*	0.152	0.188	0.167	0.062	0.003	0.072
4. Are overweight people discriminated against?	0.171	0.059	0.254*	1.000	0.124	0.133	0.062	0.049	0.009	0.051
5. Have you tried to lose weight?	0.033	-0.121	0.152	0.124	1.000	0.096	0.142	0.018	0.049	0.101
6. Role of diet in obesity	0.042	0.101	0.188	0.133	0.096	1.000	0.181	-0.055	-0.114	-0.155
7. Inclination to binge	0.208	-0.059	0.167	0.062	0.142	0.181	1.000	0.317**	0.309**	0.033
8. Problem of compulsive eating	0.074	0.070	0.062	0.049	0.018	-0.055	0.317**	1.000	0.695**	0.228*
9. Problem of obsession with eating	0.115	-0.018	0.003	0.009	0.049	-0.114	0.309**	0.695**	1.000	0.209*
10. Psychological problem	0.193	-0.030	0.072	0.051	0.101	-0.155	0.033	0.228*	0.209*	1.000

Numbers represent Spearman's rank correlation coefficient value. *p < 0.05; **p < 0.01 level.

Obesity is a chronic disease and these patients should have access to evidence-based comprehensive obesity management programmes.

Much of the research on the cultural acceptance of obesity in South Africa was done during the HIV epidemic and post-apartheid.^{3-5,28} There is a preference for larger body size and a greater tolerance of increased body size among black South African women.³ The findings in this study are demonstrating some shift away from the traditionally accepted cultural belief that 'big is beautiful'³ with 83% being unhappy with their weight. Even encouragement from their partners was only around 10% in this study, with 1% being associated with wealth as their reason for obesity. Given that media and health campaigns equate weight loss with being healthy, this concept increasingly exposes black South African women to conflicting body size ideals. Future studies should therefore monitor the effect of such influences on body size preferences.

Limitations

The strength of the study included that, to the best of our knowledge, this is a first study documenting internalised weight bias with abnormal eating behaviours. Although the present findings are interesting and sometimes a paradox, some issues limit their generalizability. We have focused on only obese and overweight and therefore the BMI range was limited, as was the choice of a self-selected convenience sample. The use of a structured questionnaire for the data collection on weight bias, perceived reasons for obesity and the participants' eating behaviours is limited in its interpretations. Thus, based on a more pragmatic and less epistemologically oriented perspective, a combination of quantitative and qualitative methods would achieve more optimal results. This relatively small cross-sectional study sample performed on a single cohort of mainly female participants attending a general practice may have impacted on the findings and therefore might not be applicable to a larger population group.

Conclusions

These study results have shown that weight bias and particularly internalised weight bias are associated with abnormal eating

behaviours. More research should be done exploring the promotion of psychosocial well-being of patients while trying to manage their obesity. The prevalence of weight bias and discrimination is high in other parts of the world and to date little is known about the prevalence and patterns of weight bias and discrimination in South Africa. Future research needs to be done to determine the extent of this, particularly in public spaces such as the workplace, schools, health institutions, etc.

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