

Body size perception of African women (25–44 years) in Mangaung

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OPSOMMING

Oorgewig is een van die mees algemene, dog voorkombare, gesondheidsprobleme in Suid-Afrika, veral onder volwasse swart vroue. Oorgewig word met 'n verskeidenheid van patalogiese toestande, onder andere hipertensie, tipe-2 diabetes mellitus, kardiovaskulêre siektes en vroetydige dood, geassosieer. 'n Verwesterde leefstyl onder inwoners van ontwikkelende lande lei dikwels tot veranderinge in eetgewoontes en gevolglik toenemende vlakke van vetsug.

Vroue in laer sosio-ekonomiese klasse is drie- tot ses maal meer geneig tot oorgewig as dié met hoër sosio-ekonomiese status, ongeag etnisiteit. 'n Aantal faktore beïnvloed liggaamsgroottepersepsie, insluitend kultuur, sosio-ekonomiese status, sosiale persepsie van vetsug, en die persepsie van gesondheid en gewig in verhouding tot liggaamsgrootte. Volgens omvangryke navorsingsbevindings is 'n groter liggaamsbou onder swart vroue kultureel meer aanvaarbaar en spreek van goeie gesondheid, finansiële welvaart, seksualiteit, waardigheid, aantreklikheid, verhoogde funksionaliteit, en afwesigheid van infeksie met die menslike immuungebreek-virus (MIV).

Die primêre doel van hierdie studie was om insig te verkry ten opsigte van die persepsie van liggaamsgrootte onder swart vroue in die Mangaung-area, sentraal-Vrystaat. 'n Verteenwoordigende steekproef van 500 swart vroue in twee ouderdomsgroepe (25–34 en 35–44 jaar) is ewekansig vir die studie gekies. Die studie het oor 25 weke gestrek, waartydens 20 deelnemers elke week ingesluit is. Deelnemers se beskouing van vetsug, tot watter mate hulle persoonlike beskouing dié van die algemene populasie verteenwoordig, en hulle houding teenoor gewigsbeheer is ondersoek.

Antropometriese data, wat vetpersentasie, heup-middelverhouding, gewig en lengte ingesluit het, is versamel. 'n Liggaamsmassa-indeks groter as 25 kg/m² is by meer as 50% van die teikenpopulasie aangetoon. ('n Liggaamsmassa-indeks van 20<25 kg/m² word as verteenwoordigend van 'n normale liggaamsmassa beskou.) Liggaamsgroottepersepsie is bepaal deur die deelnemers se reaksie op 'n reeks van vyf foto's, verteenwoordigend van vyf berekende liggaamsmassa-indekskategorieë, te evalueer. Ongeveer 30% van die respondente het die oormassa liggaam as die gesondste sowel as die mees welgestelde beskou.

Alhoewel vetsug oorwegend as gesond beskou is, het die meeste deelnemers aangedui dat dit nie aantreklik is nie. Ongeveer 30% van die deelnemers

het die foto verteenwoordigend van 'n laer-as-normale liggaamsmassa-indeks as die mees aantreklike voorkoms gekies. Slegs 8% van die jonger vroue en 12% van die ouer vroue het die foto verteenwoordigend van 'n ondergewig voorkoms as mees aantreklik aangedui. Meer as 60% van albei ouderdomsgroepe het gevoel dat die gemeenskappe waartoe hulle behoort, 'n ondergewig persoon onaantreklik sal vind. 'n Skraal liggaamsbou word met armoede, onderliggende siekte of emosionele ongesteldheid geassosieer.

Die liggaamsgroottepersepsie van respondente en meegaande tevredenheid met groter liggaamsmassa, beïnvloed na alle waarskynlikheid eetgedrag. In teenstelling met die Westerse beskouing, was hierdie populasie nie gemotiveerd om hul eetgedrag ter wille van gesondheidsoorwegings te beheer nie, aangesien hulle nie gesondheidsprobleme as verwant aan liggaamsgrootte beskou nie. Kultuur oefen nog steeds 'n sterk invloed op die populasie se houding teenoor gewigsbeheer uit. Toekomstige programme om vetsug onder swart Suid-Afrikaanse vroue te bestuur, behoort kulturele, sosiale en sosio-ekonomiese aspekte as 'n integrale deel van gesondheidsopvoeding aan te spreek.

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INTRODUCTION

Obesity is one of the most prevalent, yet preventable, health problems in South Africa, especially among adult African women (Hoffman *et al.*, 1997; Walker & Segal, 1997; MacIntyre, 1998:451-492; Kalk, 2001). Obesity is associated with a wide range of pathological conditions such as hypertension, type-2 diabetes mellitus, cardiovascular disease and early death (Lean *et al.*, 1998; Björntorp, 2001; Popkin, 2001; Goedecke *et al.*, 2006:65-79).

Nutritional patterns of the African population seem to be changing simultaneously with the adoption of a western lifestyle. They adopt the western eating habits and thus increasing levels of obesity occur in developing countries (Chabi *et al.*, 1998; Kim *et al.*, 2000; Popkin, 2001).

People differ in terms of their observations of their worlds - politics and religious difference bearing testimony to this. People also don't see their physical surroundings in a similar light: for example, a perception discrepancy can be found when comparing how overweight people see themselves and how other people see the overweight person's body. Puoane *et al.* (2002) postulates that, in South Africa, women have inaccurate perceptions of their body weight. In a demographic and health survey these researchers found that only 16% of overweight black South African women perceived themselves as overweight.

A number of factors can affect body size perceptions. These factors include culture, socio-economic status, social perception of obesity, perceptions of overweight individuals and perception of health and weight related to body size. According to a considerable body of research, African women with a larger size appear to be culturally more acceptable, portraying a symbol of health, financial wealth, sexuality, dignity, attractiveness, increased functional capacity, and absence of the human immunodeficiency virus (HIV) (Prentice, 2000; Reboussin *et al.*, 2000). According to various studies done in South Africa (Kruger *et al.*, 1994; Clark *et al.*, 1999; Mvo *et al.*, 1999) overweight African women also appeared to be culturally more acceptable, portraying a symbol of prosperity and dignity.

In contrast to the white experience of feeling pressurised to be thin, black women described feelings of being influenced by friends and family to maintain a larger body size (Powell & Kahn, 1995; Puoane *et al.*, 2005). They were cautioned not to lose too much weight, or told they looked too thin, or that they looked just fine being heavier.

Ethnic differences have also been documented in relation to weight perception and weight loss behaviour. Overweight black women were generally more satisfied with their appearance than white women. Therefore, factors other than body size per se might influence black women's overall evaluation of their appearance. Investigators (Kumanyika *et al.*, 1993; Stevens *et al.*, 1994) have found that black women consider themselves attractive even though they feel

dissatisfied with their body size. In a study of 500 African-American women, approximately forty percent of the overweight women considered their figures to be attractive or very attractive, indicating a positive body weight perception (Kumanyika *et al.*, 1993). Recognizing the fact that cultural preoccupation with thinness has increased, researchers have also been interested in the social perception of obesity (Wilfley *et al.*, 1996, Shaw *et al.*, 2004).

Dawson (1988) suggested that Black women do not perceive themselves as overweight because they evaluate their body size not in relation to the white ideal in the media, but in comparison to other black women in their social milieu. In this study we sought to investigate if Black women in Mangaung also complied with Dawson's suggestion. The perceptions of these women on health, weight and attractiveness were measured, as well as their perception on the reaction of the community towards obese and underweight persons. Most of the research concerning body weight perception has been conducted on college-age students (Cash & Pruzinsky, 2002:509-516). Consequently, it would be of interest to investigate the differences in body size perception of older and younger Black women as well as the body size perception of the respondents in relation to their BMI.

METHODOLOGY

Photographs and Questionnaire used

The instrument comprised a set of photographs and a questionnaire.

Photographs A graded set of photographs with calculated BMI's was developed using a modification of the distorting photograph technique (Massara & Stunkard, 1979). A black female volunteer with a known body mass index falling within the normal range (22,7 kg/m²) was photographed. The picture was scanned and then distorted using the computer program L View Proã (1993-1996) to produce images that were both thinner and wider than the original. The height of the figure remained the same while the breadth was resized. In order not to reduce or enlarge the size of the figures beyond reality, only five photographs were used instead of the entire series. The five photographs (Fig 1) were selected to illustrate a range of five BMI's, namely underweight (<18,5 kg/m²), a lower range of normal weight (18,5-19,9 kg/m²), a higher range of normal weight (20-24,9 kg/m²), overweight (25-29,9 kg/m²) and obese (>30 kg/m²). Validity of the photographs was tested by 21 experts who viewed the photographs in random order and assigned a BMI value to each. An expert was defined as a registered dietician who had treated underweight, overweight and obese patients for more than one year in a private practice or hospital setting. Statistical analyses were conducted by the Department of Biostatistics using the Statistical Analysis System (SAS/STAT®, 1989:943). The number and percentage of experts who classified each photograph was calculated, and the BMI assigned to each photograph was described by the mean and standard deviation. In addition, 95% confi-

dence intervals (CI) were calculated (Altman, 1999). Validation of those photographs that had lower and upper ranges of BMI (not the photographs depicting underweight and obese) was done by 95% limits of agreement to measure how closely 95% of all experts would gauge each range.

Classification of photographs by experts The classification of photographs by experts is summarised in Table 1. All experts classified the photographs in the correct order and estimated the BMI average for photographs 1 through 5 as 17, 19,9, 24, 28,6 and 35,9 kg/m² respectively. The 95% confidence intervals indicated that for all photographs except photograph 2, the mean value assigned by experts fell within the correct range. For photograph 2, seven experts rated the BMI correctly to fall within the range of 18,5-19,9. Eight experts rated the BMI of photograph 2 as 20,0, thus differing from the upper limit of 19,9 by 0,1. Only six experts rated the BMI of photograph 2 higher than 20,0. The maximum difference (all from the same expert) was 2,1 for photographs 2, 3 and 4.

The questionnaire The structured questionnaire, compiled after a literature review, was used in a previous study that determined the body size perceptions of female first-year university students (Slabber *et al*, 2000). The first part of the questionnaire included questions relating to health, weight and attractiveness. The second part covered questions on how the

respondents perceived the community's reactions towards an overweight and underweight person. The questionnaire, used in conjunction with the photographs, was used in a larger study that investigated the nutritional health of 500 randomly chosen premenopausal black women, aged between 25 and 44 years, from Mangaung (Free State, South Africa).

The reliability of questions on body size perception is summarised in Table 2. The answers obtained from the two interviews were evaluated, and the questions with conflicting answers exceeding 20% were considered unreliable.

Research procedure

Over a period of 25 weeks, 20 women were interviewed once a week. Subjects were weighed barefoot in an examination gown to the nearest 0,1 kilogram (kg) using a digital electronic scale. Height was determined to the nearest 0,5 centimetres (cm) by using a stadiometer. During measurements, subjects were standing upright against a flat surface with the head in the Frankfort plane position.

The photographs were shown during the individual interviews. One trained researcher conducted all the interviews with the aid of a Sesotho interpreter. The five photographs were placed randomly at eye level before the participant. While the photographs were being viewed, the researcher interviewed the partici-

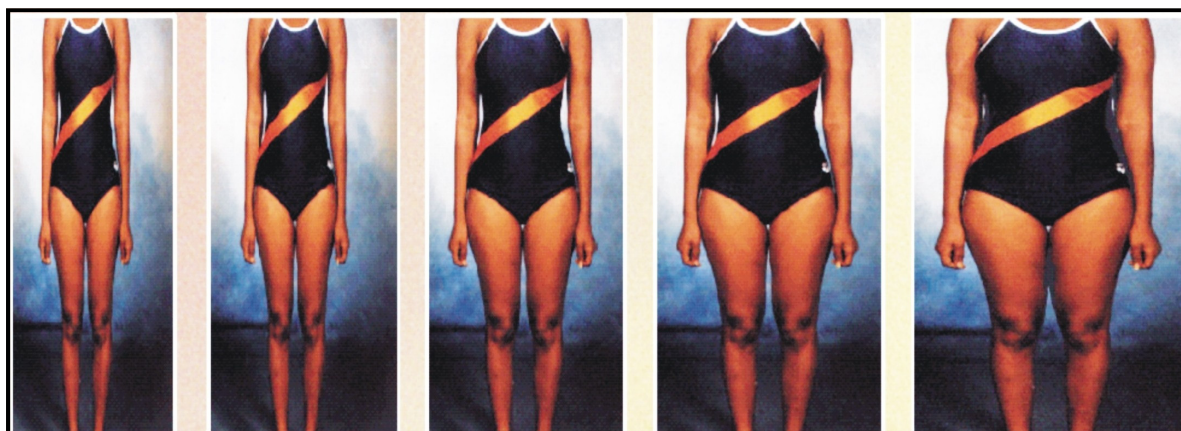


FIGURE 1: BODY FIGURES

TABLE 1: CLASSIFICATION OF PHOTOGRAPHS BY EXPERTS (N=21)

	Photograph 1 (<18,5 kg/m ²)	Photograph 2 (18,5-19,9 kg/m ²)	Photograph 3 (20,0-24,9 kg/m ²)	Photograph 4 (25,0-29,9 kg/m ²)	Photograph 5 (≥30 kg/m ²)
Number correct	20 (95%)	7 (33%)	14 (67%)	14 (67%)	21 (100%)
Number incorrect	1 (5%)	14 (67%)	7 (33%)	7 (33%)	0
Number differing by more than 0,1 kg/m ²	0	6 (28,6%)	2 (9,5%)	2 (9,5%)	0
Maximum difference*	0	2,1	2,1	2,1	0
Average	17	19,9	24	28,6	35,9
Standard deviation	2,3	1,05	1,45	1,63	3,15
95% Confidence interval	15,9; 18,1	19,4; 20,4	27,9; 29,3	23,3; 24,7	34,5; 37,3
95% Limits of agreement**	14,7; 19,3	17,8; 22,0	21,1; 26,9	25,3; 31,9	29,6; 42,2

* The same expert

** Range within which 95% of all experts will classify this photograph

TABLE 2: BODY SIZE PERCEPTION QUESTIONNAIRE AND PERCENTAGE DIFFERING ON REPETITION

Questions	% differing
1 Which person looks the healthiest?	14,2
2 Which person's body is the most attractive?	14,2
3 Indicate which photos belong to the following categories:	
A Female fat (overweight).	10,2
B Female normal (acceptable).	4,1
C Female slim (underweight).	4,1
4 What is the reaction of your community towards somebody that looks like photograph 5*?	
A Think they are rich.	10,2
B Think they are healthy.	6,1
C Think they are attractive.	8,2
D Think they are the same as other people.	8,4
E Think they are lazy and do not like them.	22,5
F Avoid them socially.	36,7
G Laugh at them.	18,4
5 What is the reaction of your community towards somebody who looks like photograph 1**?	
A Think they are rich.	4,1
B Think they are healthy.	6,1
C Think they are attractive.	8,1
D Think they are the same as other people.	14,3
E Think they are lazy and do not like them.	12,2
F Avoid them socially.	38,8
G Laugh at them.	20,4

* Photograph 5 – obese body size

** Photograph 1 – underweight body size

pant using the structured questionnaire. The participant was asked to indicate the body size that best represented the following states: healthy, an attractive body, normal (acceptable) body size, fat (overweight, obese), and too slim (underweight). The participants' perceptions of the community's attitude were determined by their response to the photographs that represented underweight (BMI<18,5) and obese (BMI>30) women.

A pilot study was performed on a group of twenty African pre-menopausal women who were not part of the selected sample. It was determined that the photographs should be placed in random order to ensure that the respondents did not always choose the first photograph as the most underweight and the last photograph as the most obese.

All participants gave written informed consent and the Ethics Committee of the Faculty of Health Sciences, University of the Free State, approved the study.

Data analysis

The data were categorised into two age groups: 25-34 years and 35-44 years. For each group, continuous variables were described by means and standard deviations, or medians and percentiles as applicable.

Frequencies and percentages described categorical variables.

The data were also categorised into one of three weight groups, namely normal weight, overweight and obese and associations between weight status and perceptions were calculated using Chi-squared and Fishers Exact test p-values with a significance of $p < 0,05$.

RESULTS

Body mass index (BMI)

Table 3 shows the body mass index (BMI) of the African women aged between 25 and 44 years.

The body mass index (BMI) of a large percentage (38%) of the subjects fell in the normal weight category: An even higher percentage (52,7%) of subjects were overweight or obese therefore most subjects fell in the overweight and obese BMI categories.

Perceptions of health, weight and attractiveness

Table 4 shows the reaction of respondents to the photographs concerning health, weight and attractiveness.

TABLE 3: BODY MASS INDEX OP PARTICIPANTS

BMI Category	25-44 years (n=496)	
	n	%
Underweight: <18,5 kg/m ²	16	3,2
Lower normal weight: 18,5<20 kg/m ²	31	6,3
Normal weight: 20<25 kg/m ²	187	37,8
Overweight: 25<30 kg/m ²	144	29,1
Obese: ≥30 kg/m ²	117	23,6

TABLE 4: SUBJECTS' PERCEPTIONS OF HEALTH, HEALTHY WEIGHT AND ATTRACTIVENESS IN RESPONSE TO PHOTOGRAPHS DEPICTING FIVE BMI CATEGORIES (N=495)

Question	Which person looks:	BMI Categories				
		Underweight	Lower normal weight	Normal weight	Overweight	Obese
The healthiest?	n	48	126	69	150	102
	%	9,8	25,4	14	30,1	20,7
Overweight?	n	1	7	10	41	436
	%	0,2	1,4	2,0	8,2	88,2
Acceptable (normal weight)?	n	70	135	137	145	8
	%	14,1	27,2	27,6	29,3	1,8
Underweight?	n	434	41	9	12	0
	%	87,5	8,3	1,8	2,4	0
The most attractive?	n	46	148	108	135	58
	%	9,2	29,9	21,9	27,2	11,8

TABLE 5: THE REACTION OF THE COMMUNITY TOWARDS OBESE AND UNDERWEIGHT PERSONS AS PERCEIVED BY THE PARTICIPANTS (N=495)

They think they are	What is the reaction of your community towards							
	an obese (BMI ≥ 30 kg/m ²) person?				an underweight : (<18,5 kg/m ²) person?			
	Yes		No		Yes		No	
	n	%	n	%	n	%	n	%
rich	242	48,6	253	51,2	97	19,6	398	80,2
healthy	263	52,8	232	47	176	35,5	319	64,3
attractive	202	40,2	293	59,3	179	36	316	63,7
the same as other people	236	47,4	26	52,4	299	46,2	266	53,7
rich	242	48,6	253	51,2	97	19,6	398	80,2

Healthy appearance When asked which person appeared to be the healthiest, 25,4% of the respondents chose the lower normal weight (BMI of 18,5<20 kg/m²). The largest percentage (30%) of respondents chose the overweight person as representing the healthiest image.

Acceptable weight When asked, "Which person looks acceptable?" a fairly high percentage (29,3%) respondents chose overweight while 27,6% and 27,2% chose normal and lower normal weight respectively.

Attractiveness Almost one-third of the respondents (30%) chose the lower normal weight as the most attractive body. In addition, 27,2% women also chose the overweight BMI as attractive. Very few

(9,2%) women chose underweight as being the most attractive.

Perceptions of respondents of how the community views underweight and overweight persons

Table 5 represents the respondents' views when asked to indicate how their community viewed the photographs depicting obese and underweight people (either rich, healthy, attractive, or the same as other people). When asked whether the community viewed an obese person as rich or not, 48,6% of women responded that obese people were viewed as rich, while 51,2% disagreed. More than half of the women (52,8%) thought that obese people were healthy. With regard to obesity and attractiveness, most women (59,3%) viewed obese persons as less attractive in

the eyes of the community. The percentage of women who considered the community to view obese people the same as other people, was 47,4%.

The same questions were asked about the body size photographs representing an underweight individual. When asked whether the community viewed slim people as being rich, the vast majority of women (80,2%) responded that the community did not view slim people as being wealthy. The majority of respondents also indicated that the underweight body size was considered unhealthy (64,3%).

Perceptions of health, weight and attractiveness related to age of respondents

Table 6 shows the reaction of respondents to the photographs concerning health, weight and attractiveness.

Healthy appearance When asked which person appeared to be the healthiest, 28,6% of the older respondents chose the lower normal weight (BMI of 18,5<20 kg/m²). The largest percentage of respondents in both age groups (31,3% and 29% of the younger and older participants, respectively) chose the overweight person as representing the healthiest image.

Acceptable weight When asked, "Which person looks acceptable?" the largest percentage of respondents in the younger group (31,3%) chose normal weight, while 33,6% of the older group chose t lower normal weight. A fairly high percentage of the younger group also chose lower normal weight (22,3%) and overweight (28,4%), while the older group chose normal weight (23,1%) and overweight (30,4%). More women indicated that overweight bodies were healthy, but that the lower normal weight seemed more attractive.

Attractiveness Almost one-third of the respondents (29,1% of younger women and 30,9% of older women) chose lower normal weight as the most attractive body. In addition, 24,8% and 27% of the younger women also chose normal weight and overweight, respectively. In the older group, 27,6% of women chose overweight as being most attractive. Very few (7,6% of the younger and 11,5% of the older women) chose underweight as being the most attractive.

The only statistically significant differences between the younger and older groups were that a larger percentage of the younger women viewed normal weight as the healthiest ($p=0,0156$), as well as acceptable ($p=0,0049$), whereas a large percentage of the older women viewed the underweight as underweight ($p=0,0329$), and the lower normal weight as acceptable ($p=0,0417$).

Perceptions of respondents in two age groups of how the community views underweight and overweight persons

Table 7 represents the respondents' perceptions about how their community viewed the obese and underweight people (either rich, healthy, attractive, or the same as other people). When asked whether the community judged an obese person to be rich or not, 47,8% of younger women responded that obese people were judged to be rich, while 52% disagreed. In the group of older women these differences were smaller (49,8% and 50,2%, respectively). More than half of the younger women's (55%) perceptions were that the community will see obese people to be healthy. With regard to attractiveness, most women in both the younger (60,4%) and the older (58,1%) groups thought that their community viewed obese persons as less attractive.

TABLE 6: SUBJECTS' PERCEPTIONS OF HEALTH, WEIGHT AND ATTRACTIVENS IN RESPONSE TO PHOTOGRAPHS DEPICTING FIVE BMI CATEGORIES

Question		BMI Categories									
		Underweight		Lower normal weight		Normal weight		Overweight		Obese	
		Y* (n=278)	O# (n=217)	Y (n=278)	O (n=217)	Y (n=278)	O (n=217)	Y (n=278)	O (n=217)	Y (n=278)	O (n=217)
the healthiest?	n	27	21	64	62	48	21	87	63	52	50
	%	9,7	9,7	23,0	28,6	17,3	9,7	31,3	29	18,7	23
overweight?	n	1	0	5	2	5	5	22	19	245	191
	%	0,4	0	1,8	0,9	1,8	2,3	7,9	8,8	88,1	88
acceptable (normal weight)?	n	44	26	62	73	87	50	79	66	6	2
	%	15,8	12	22,3	33,6	31,3	23,1	28,4	30,4	2,2	0,9
underweight?	n	236	198	27	14	6	3	9	2	0	0
	%	85	91,2	9,7	6,5	2,1	1,4	3,2	0,9	0	0
the most attractive?	n	21	25	81	67	69	39	75	60	32	26
	%	7,6	11,5	29,1	30,9	24,8	17,9	27	27,6	11,5	12,

*Y = younger group

#O = older group

TABLE 7: WHAT THE COMMUNITY THINKS ABOUT OBESE AND UNDERWEIGHT PERSONS AS PERCEIVED BY THE PARTICIPANTS

	What is the reaction of your community towards															
	an obese (BMI \geq 30 kg/m ²) person?							an underweight (BMI \leq 18,5 kg/m ²) person?								
	25-34 years (n=278)				35-44 years (n=217)			25-34 years (n=278)				35-44 years (n=217)				
	Yes		No		Yes	No		Yes		No		Yes		No		
They think they are:	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
rich	133	47,8	145	52,2	108	49,8	109	50,2	47	16,9	231	83,1	50	23	167	77
healthy	153	55	125	45	109	50,2	108	49,8	106	38,1	172	61,9	70	32,3	147	67,7
attractive	110	39,6	168	60,4	91	41,9	126	58,1	106	38,1	172	61,9	73	33,6	144	66,4
the same as other people	131	47,1	147	52,9	104	47,9	113	52,1	128	46	150	54	101	46,5	116	53,5

TABLE 8: PERCEPTIONS OF HEALTH, WEIGHT & ATTRACTIVENESS RELATED TO THREE BMI GROUPS OF RESPONDENTS

Question Which person looks: Chi-squared p-value	BMI Categories of respondents					
	Normal weight (n=218)		Overweight (n=143)		Obese (n=117)	
	n	%	n	%	n	%
the healthiest?	p					
Photo 1: <18,5 kg/m ²	23	10,55	6	4,20	16	13,68
Photo 2: 18,5<20 kg/ m ²	55	25,2	43	30,07	23	19,66
Photo 3: 25<30 kg/m ²	38	17,43	17	11,89	13	11,11
Photo 4: 20<25 kg/m ²	58	26,61	48	33,57	41	35,04
Photo 5: \geq 30 kg/m ²	44	20,18	29	20,28	24	20,51
overweight?	0,7630					
Photo 1: <18,5 kg/m ²	0	0	1	0,70	0	0,00
Photo 2: 18,5<20 kg/ m ²	4	1,83	2	1,40	1	0,85
Photo 3: 25<30 kg/m ²	4	1,83	3	2,10	1	0,85
Photo 4: 20<25 kg/m ²	18	8,26	14	9,79	7	5,98
Photo 5: \geq 30 kg/m ²	192	88,07	123	86,01	108	92,31
acceptable (normal weight)?	0,0142*					
Photo 1: <18,5 kg/m ²	33	15,14	23	16,08	13	11,11
Photo 2: 18,5<20 kg/ m ²	48	22,02	54	37,76	25	21,37
Photo 3: 25<30 kg/m ²	64	29,36	27	18,88	40	34,19
Photo 4: 20<25 kg/m ²	68	31,19	37	25,87	38	32,48
Photo 5: \geq 30 kg/m ²	5	2,29	2	1,40	1	0,85
underweight?	0,2579					
Photo 1: <18,5 kg/m ²	193	88,53	119	83,22	107	91,45
Photo 2: 18,5<20 kg/ m ²	16	7,34	7	11,89	8	6,84
Photo 3: 25<30 kg/m ²	4	1,83	5	3,50	0	0,00
Photo 4: 20<25 kg/m ²	5	2,29	2	1,40	2	1,71
Photo 5: \geq 30 kg/m ²	0	0,00	0	0,00	0	0,00
the most attractive?	0,8187					
Photo 1: <18,5 kg/m ²	19	8,72	12	8,39	11	9,40
Photo 2: 18,5<20 kg/ m ²	68	31,19	39	27,27	38	32,48
Photo 3: 25<30 kg/m ²	43	19,72	33	23,08	29	24,79
Photo 4: 20<25 kg/m ²	58	26,61	44	30,77	28	23,93
Photo 5: \geq 30 kg/m ²	30	13,46	15	10,49	11	9,40

The same questions were asked about an underweight individual. When asked whether the community viewed slim people to be rich, the vast majority of younger (83,1%) and older women (77%) thought that the community did not view slim people as being wealthy. The majority of respondents also indicated that the underweight body size was considered unhealthy (61,9% of younger women and 67,7% of older women). The view that underweight was considered to be less attractive was expressed by 61,9% of the younger group and 66,4% of the older group. These results corresponded with the feedback obtained when respondents were asked to choose the photo-

graph that depicted the most attractive body. Very few (7,6% of younger women and 11,5% of older women) felt that underweight was most attractive.

In both age groups significantly higher percentages of respondents viewed the obese person as rich and healthy ($p < 0,0002$) compared to the underweight person. No significant differences were found between the two age groups.

Perceptions of health, weight and attractiveness related to BMI of the respondents

TABLE 9: PERCEPTIONS OF THE RESPONDENTS ABOUT THE REACTION TOWARDS OBESE AND UNDERWEIGHT PERSONS RELATED TO BMI OF RESPONDENTS

		BMI Categories of respondents					
What is the reaction of your community towards: an obese (BMI ≥ 30 kg/m ²) person?		Normal weight (n=218)		Overweight (n=143)		Obese (n=117)	
They think they are:	p	YES	NO	YES	NO	YES	NO
rich	0,3161	n 112 % 51,38	106 48,62	68 47,55	75 52,45	50 42,74	67 57,26
healthy	0,6024	n 109 % 50,00	109 50,00	78 54,55	65 45,45	64 54,70	53 45,30
attractive	0,6500	n 85 % 38,99	133 61,01	55 38,46	88 61,54	51 43,59	66 56,41
the same as other people	0,0958	n 91 % 41,74	127 58,26	69 48,25	74 51,75	63 53,85	54 46,15
What is the reaction of your community towards: an underweight (BMI $\leq 18,5$ kg/m ²) person?		Normal weight (n=218)		Overweight (n=143)		Obese (n=117)	
They think they are:	p	YES	NO	YES	NO	YES	NO
rich	0,1873	n 49 % 22,48	169 77,52	21 14,69	122 85,31	23 19,66	94 80,34
healthy	0,0225	n 78 % 35,78	140 64,22	39 27,27	104 72,73	51 43,59	66 56,41
attractive	0,2041	n 82 % 37,61	136 62,39	44 30,77	99 69,23	48 41,03	69 58,97
the same as other people	0,0054	n 85 % 38,99	133 61,01	68 47,55	75 52,45	67 57,26	50 42,74

Table 8 represents the respondents' perceptions of health, weight and attractiveness related to three BMI groups (normal weight, n=218, overweight, n=143, obese, n=117).

Healthy appearance A large percentage of the normal weight, overweight and obese respondents indicated that the overweight person was seen as the healthiest (26,6%, 33,6%, 35% respectively).

Acceptable weight When asked which person looks acceptable (normal weight) 31% of the normal weight and 32 % of the obese respondents indicated that the figure depicting overweight was most acceptable. Thirty eight percent of the overweight respondents reported that lower normal weight was most acceptable.

Attractiveness The normal weight and obese respondents stated that the lower normal weight was most attractive (31% and 32% respectively), while the overweight respondents (31%) chose overweight as most attractive.

Perceptions of the respondents about the reaction towards obese and underweight persons related to BMI of respondents

Table 9 represents the respondents' perceptions about the reaction towards obese and underweight persons related to BMI of respondents. Almost half of the normal weight (49%) and overweight respondents (52%) indicated that the an obese person was seen by the community as not being rich. A slightly higher percentage (57%) of obese respondents responded in this way. The same pattern occurred concerning the perceptions about the health of an obese person. Fifty percent of the normal weight, 55% of overweight and

obese respondents reported that an obese person is seen by the community as healthy. The normal weight, overweight and obese respondents all agreed that, in the eyes of the community, an underweight person was not seen to be rich (78% 85% and 80%). Most of the overweight respondents indicated that underweight is considered to be unhealthy and unattractive (73% and 69% respectively).

DISCUSSION

In this study a tool for the objective measurement of black South African women's perceptions of body size and community attitudes towards body size was developed. The computer program used to develop the tool uses a relatively simple and quick technique to produce a series of distortions of a scanned photograph. An expert panel of registered dietitians assigned a specific BMI to each photograph. Photograph 2, which represents a BMI of the lower range of normal weight (18,5-19,9 kg/m²) showed the highest incorrect ratings, with six experts differing by more than 0,1 kg/m². However, the BMI ranges represented by photograph 2 (lower range of normal weight) and photograph 3 (higher range of normal weight) are still within the normal weight range as classified by the WHO (Mahan & Escott-Stump, 2000:493). The photographs thus proved to be valid reproductions of the BMI's they were intended to portray.

The limitations of this method of producing images should, however, be recognised. If the body size is enlarged horizontally to a greater extent than that in photograph 5 without changing the height, the photographic image seems unreal. All obesity classifications (Mahan & Escott-Stump, 2000:493) could thus not be represented, and the range of photographs

included only one obese image that was classified as BMI > 30 kg/m². Furthermore, this method relies on an image of the whole body and introduces an equal amount of distortion to all body parts. The photographic images of body size, like most other techniques, include only one view (frontal view) and do not allow subjects to form a holistic picture of the body. Showing all the other views would imply many more photographic images, which would extend the test, with a risk of participants losing interest.

Reliability of a research tool refers to the consistency with which a measuring instrument yields a certain result when the entity being measured has not changed (Leedy & Ormond, 2005:29). Collins (1987) remarked that reliability data are rarely reported for measures of body image. Garner and Garfinkel (1981) reported reliable self-estimates using distorted photographs after one week of $r=0,75$ for anorexics and $r=0,45$ for controls. In our study the reliability data showed that most measures were stable over time. To keep the test relatively simple the questionnaire was short. Only three questions in the structured questionnaire were proved unreliable and were discarded. Body sizes that the respondents perceived as most healthy, most attractive, fat, normal and slim were consistent and confirmed as reliable to use with the photographs in the study population. The statement "Think they are lazy and do not like them" (4E and 5E) had to be eliminated, as two concepts were asked in the same question and gave rise to conflicting answers. Confusion also arose with respect to the statement "Laugh at them", as it was often interpreted as "To laugh with them". Furthermore, the statement "Avoid them socially" seemed to be a culturally unacceptable concept in the sample population. Even though interpreters were used, differences in cultural concepts seemed to be the main reason why some questions in the questionnaire were unreliable and would have to be excluded from future studies among black South African women.

The only statistically significant differences between the younger and older groups were that a larger percentage of the younger women viewed normal weight as the healthiest ($p=0,0156$), as well as acceptable ($p=0,0049$), whereas a large percentage of the older women viewed the underweight as underweight ($p=0,0329$), and the lower normal weight as acceptable ($p=0,0417$).

In both age groups significantly higher percentages of respondents viewed the obese person as rich and healthy ($p<0,0002$) compared to the underweight person.

No statistically significant differences were found between the normal weight, overweight and obese groups of women regarding which person looks the healthiest ($p=0,06$).

A statistically significant difference between the normal weight, overweight and obese groups was found regarding which was the most acceptable weight to be ($p=0,01$) with more obese women choosing normal weight as acceptable than overweight women.

A statistically significant difference between the normal weight, overweight and obese groups was found regarding this question, with more overweight women indicating that the underweight body was considered unhealthy ($p=0,01$).

Change in appearance-related, weight and health values may happen from an individual level or at a macro level (Miller & Pumariega, 2001). Thus, self-perception and cultural factors in African groups might serve as risk factors for health problems, such as obesity. In this study, the BMI measurement profile revealed that more than one-third of the subjects belonged to the normal weight category (38%), and that more than 50% of the women were overweight or obese.

Our study supports the findings from earlier studies (Kruger *et al*, 1994) that an overweight body is considered to be the healthiest. It was found that the photograph depicting normal weight was fairly unpopular in terms of health.

More than half of the respondents asserted that, according to their experience, the community also perceived obese people as healthy. Underweight people were considered to be in poor health in the opinion of the community. Once again this is not in accordance with Western standards. In this study, health and slenderness were not linked together by most black women, even though the vast majority (67,7 %) selected a thin body size as healthy.

Cultural differences in perception of body weight have been well documented (Akan & Grillo, 1995; Cachelin *et al*, 2002; Freedman & Carter, 2007). Research has shown that African-American females are less concerned with weight, dieting, or being thin (Abrams *et al*, 1993; Akan & Grillo, 1995; Hertzberger & Molloy, 1998). Females would rather be "a little overweight" than "a little underweight". Black community health workers in South Africa revealed that they would be more attractive and healthier when they were thin, but that other women in their community would look better and more attractive when they were fat (Puoane *et al*, 2005). The results of the current study seem to support this data, indicating that culture plays an important role in body size perception. These results showed that 27,6% of the participants perceived normal weight as acceptable. Almost a third of the respondents believed that the lower normal weight and overweight figure was acceptable, respectively. Clearly, these aspects have different implications.

In western societies where thinness is regarded as a norm for beauty, young women are especially vulnerable to dissatisfaction with their body shape, and are more prone to developing eating disorders (Cooper, 1995:32-36; Cogan *et al*, 1996). South African studies postulates that black women were dissatisfied with their weight, but valued an overweight woman at the same time as more desirable. (Senekal *et al*, 2001; Puoane *et al*, 2005). On the one hand these women are exposed to the media, which portray thin women as attractive. On the other hand they want to be what they are supposed to be according to their own cul-

tural values, and thus become confused. In our study, when respondents were asked to choose the body they perceived as being most attractive, the majority of respondents chose the lower normal weight and overweight bodies as most attractive. Slightly more individuals indicated that the body of lower normal weight was attractive.

A number of studies have shown that, compared to Caucasian women, non-Westernised and some groups of Westernised African women, have adopted a larger ideal body size. They did not necessarily perceive overweight as unattractive, and were therefore less likely to aspire to thinness (Greenberg & La Porte, 1996; Toriola *et al*, 1996; Wilfley *et al*, 1996). The current study supports this view, as it was found that 63,7% participants believed that the community would find an underweight person unattractive.

When respondents were asked whether or not the community viewed obese people as being attractive, approximately 40% agreed. This is also very different from the Western viewpoint where obesity is considered to be unattractive. Beauty norms differ in societies, and the stigma of fatness being ugly is far from a universal value. Kumanyika *et al* (1993), drawing from a sample of African American women aged 25-64 years (n=55), found that about 40% of the women in the overweight categories, based on BMI, considered their figures to be attractive.

It is believed that certain cultural factors drive the standards of desirable body weight within cultures. For example, traditional Polynesian societies see obesity as a sign of good health, wealth, prestige, beauty and high social ranking (Matangi *et al*, 1995). In the current study, almost half the members of both age groups considered that an obese person was wealthy. By Western standards this observation was remarkable, since the Western view on health and wealth is totally different. One possible reason for this phenomenon could be that many respondents viewed being rich as being able to afford a lot of food. In a study amongst African women (18-36 years) in peri-urban Cape Town, an increased body mass was also perceived by some as an indication of wellbeing (Mvo *et al*, 1999). Powers (1988:6-16) suggested that in some cultures, obesity was admired, and that these cultures valued obesity as a symbol of success and economic security.

A study done by Pickett, (2007) showed that only 15 percent of obese respondents (sample - 104 adults) viewed themselves as obese. In this study 32% of respondents indicated that overweight is seen as normal weight.

Most respondents in this study felt that their community considered thinner people to be poor. Traditionally, a high circumference was seen as a sign of prosperity and health, while a skinny frame meant that a person was too poor to afford enough to eat (Powers, 1996). During the twentieth century these views have been reversed in most developed countries. However, in less-developed countries where food security is frequently still uncertain, fatness still appeared to be a sign of prestige (Powers, 1996).

CONCLUSIONS AND RECOMMENDATIONS

A valid and reliable tool, specifically to provide quantitative information on perceptions of body size amongst black South African women, was developed. Understanding the individual's perception of his/her own body size and the community's perception towards obesity might allow the health professional greater insight with regard to planning preventive interventions.

According to the results, it could be concluded that the overweight body was mostly preferred in terms of attractiveness and that health could be related to larger body size, unlike the view held by the Western culture. This study also showed that social interventions to address obesity should be based on education programmes designed to change the population's beliefs as far as the relationship between obesity on the one hand, and status and health on the other, is concerned.

The data in this study further indicated that the respondents' perceptions were influenced by cultural and social factors. However, it could also have been a matter of these women having a culturally influenced view of body weight. They might benefit from culturally relevant programmes that could help them link weight to health rather than to the dominant Western standards of thinness.

Western methods commonly used to lose weight, such as food deprivation and increased physical activity by vigorous exercise, need to be adapted to include cultural food patterns, cultural meanings of ideal weight, and increased physical activity in the daily routine.

Further research in this area should include a wider age range in order to differentiate between women in different age categories, and should include both urban and rural women to differentiate between their views and opinions.

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