

'Big is beautiful' – an exploration with urban black community health workers in a South African township

**Chronic Diseases of Lifestyle Unit, Medical Research Council, Parowvallei, W Cape
T Puoane, Dr PH (Present address: School of Public Health, University of the Western Cape, Bellville)**

J M Fourie, MPhil

Johns Hopkins University School of Nursing and Bloomberg School of Public Health, Maryland, USA

M Shapiro, RN, BSN

South African Christian Leadership Association (SACLA) (now known as Zanempilo Health Trust)

L Rosling, MB BS, MRCGP, DCH (UK) (Present address: Can Am Medical Centre, Guangzhou, People's Republic of China)

N C Tshaka, Nursing Admin Dipl (Present address: 3 Cherry Close, Tembani Village, Khayelitsha)

**Nutritional Interventional Research Unit, Medical Research Council, Parowvallei, W Cape
A Oelefse, PhD (Present address: Centre for Nutrition, University of Pretoria)**

Objectives. To explore perceptions about factors associated with body weight and body image among black female community health workers (CHWs) living and working in Khayelitsha, Cape Town.

Design. A descriptive, cross-sectional study.

Setting. Khayelitsha, a black township in Cape Town, South Africa.

Subjects. Forty-four black, female, Xhosa-speaking CHWs working in Khayelitsha.

Outcome measures. Anthropometric measures (height, weight, and waist circumference) were taken. Body mass index (BMI) was computed as a measure to estimate total body fat. Waist circumference was used as a measure of abdominal obesity. Focus groups were employed to explore beliefs and attitudes about body size. Information from the focus group discussions was used to develop a semi-structured questionnaire for individual interviews, which were conducted to validate the data from the focus groups, and to assess knowledge on causes and risk factors associated with obesity. A body satisfaction question was also included in the questionnaire. Body image was measured using body shape drawings (pictograms).

Results. Of the 44 women measured, 2 had normal weight (BMI 18.5 - 24.9 kg/m²), 2 were overweight (BMI 25 - 30 kg/m²), 25 were obese (BMI 30 - 40 kg/m²) and 15 were extremely obese (BMI ≥ 40 kg/m²). A moderately overweight shape (BMI 27 kg/m²) was preferred; this was associated with dignity, respect, confidence, beauty, and wealth. Perceived causes of obesity were eating the wrong food, skipping breakfast and worries about debts, husbands/partners and teenage children. Negative aspects of obesity included body aches and tiredness.

Conclusion. This study emphasises the prevalence of obesity among urban black women in South Africa, particularly among CHWs. Socio-cultural, behavioural and environmental factors seem to influence the development of obesity in this population.

Obesity is a major public health problem among black women living in urban South Africa.¹ Health consequences of obesity are increased morbidity and mortality, which contribute considerably to rising

health care costs.^{2,3} Obesity is also a major risk factor for chronic diseases of lifestyle (CDL), such as type 2 diabetes, coronary heart disease, stroke, hypertension, gallbladder disease and certain types of cancer.⁴

Environmental, socio-economic, behavioural and cultural factors contribute to the development of obesity.⁴ Moreover, poverty, lower educational attainment and low-status employment increase the susceptibility to obesity and exacerbate its progression.^{5,6}

Obesity is a global public health problem, and therefore needs to be approached from a broader population perspective.⁴ Interventions should focus on increasing the awareness of the risk factors associated with it and preventive strategies among the groups at risk.

Although obesity is generally recognised as a risk factor for many diseases, there is evidence that perceptions of obesity among black South African women do not correspond with the biomedical standard of body weight.^{1,7} The World Health Organization (WHO)⁴ and European Union⁸ emphasise the importance of looking at social, cultural, political, physical and structural (environmental) influences for effective prevention and management of overweight and obesity. Therefore, it is imperative that the knowledge, attitudes and beliefs of people about body size and body image be investigated in planning intervention strategies for addressing obesity in black South African women.

The aim of this study was to identify knowledge, attitudes and perceptions of the impact of obesity, including body image and body satisfaction, among urban, black, female community health workers (CHWs) in Khayelitsha, Cape Town. The positive role of CHWs as key agents in improving health has been widely documented,⁹ and their role in health promotion is being increasingly recognised in the health sector and at the level of policy-making. Understanding the beliefs and attitudes of these health promoters towards obesity will be valuable in guiding the development of culturally sensitive intervention strategies for obesity prevention in the broader community.

Body image is the subjective sense people have about their bodies, encompassing self-perception and attitudes towards their physical appearance.¹⁰ Perceptions are ideas that exist in the minds of people as the product of careful mental activity, and ideas about how they are viewed by other people.¹¹ Ajzen and Fishbein¹² define attitude as a 'learned predisposition to respond in a consistently favourable or unfavourable manner with respect to a given attitudinal object'.

Setting

This study was part of the PINCH (**P**revalence, screening, and effect of lifestyle modification **i**ntervention by trained **c**ommunity **h**ealth workers) study. The objectives of the study were firstly, to examine the prevalence of CDL and their associated risk factors in the urban black community of Khayelitsha, and secondly, to reduce risk factors for

CDL by promoting healthy behavioural and environmental changes in the community.

Khayelitsha, a large black township located in Cape Town, has a population estimated at between 350 000 and 900 000.¹³ Average household size is 5.6 people/residents, and more than 40% are unemployed. Many people have moved to Khayelitsha seeking employment, although opportunities are scarce.¹³

Subjects

Study participants included 44 black female, Xhosa-speaking residents from site B ($N = 24$) and site C ($N = 20$) in Khayelitsha, employed as CHWs. These were the only Zanempilo (formerly the South African Christian Leadership Association (SACLA) CHWs in Khayelitsha.

Methods

Data were collected in four phases: (i) anthropometric measurements; (ii) focus group discussions; (iii) individual interviews; and (iv) photographs taken by the CHWs of portion sizes of prepared food and foods available in the local shops.

Anthropometric measurements

Height was recorded to the nearest 0.1 cm using a metal measuring tape, secured against a flat wall, and a flat headboard at right angles to the wall. Subjects were measured without shoes with their backs, buttocks and heels as close to the wall as possible.¹⁴

Weight was determined on a calibrated electronic load cell digital scale with a maximum weight of 136 kg (UC-3000 Precision Health Scale, accurate to 0.05 kg). An analogue scale was used to determine the weights of those heavier than 136 kg (Soehnle Medica, accurate to 500 g, maximum 150 kg). For one subject weighing more than 150 kg, two analogue scales were used with one foot on each scale.

Waist circumference, to the nearest centimetre, was used as a measure for abdominal obesity. The narrowest part of the torso, as viewed from the front side of the body, was measured using a flexible tape measure. The tape was held at a two-finger distance above the umbilicus.¹⁴

Focus groups

Two focus group discussions (12 and 15 per group) were held with the participants, to explore attitudes, perceptions and the factors associated with body weight. Two research assistants, 1 scribe and 1 observer, facilitated the group discussions. The discussions were recorded using a tape recorder, and transcribed by 2 researchers. The questions discussed included: (i) What is regarded as an acceptable shape for a woman?; (ii) What causes people to be over-

weight?; (iii) What is good about being overweight?; (iv) What is bad about being overweight?; (v) What conditions can overweight people suffer from?; and (vi) What are some of the factors preventing people from doing exercises, and would you say people do exercises to lose weight or to be fit?

Interviews

The information collected from focus group discussions was used by the principal investigator to develop a semi-structured questionnaire that was tested on 5 Khayelitsha residents before being finalised. Attitudes of the CHWs towards fatness and thinness were assessed using agree/disagree statements.

Body image was measured using body-shape drawings (pictograms) originally developed by Stunkard *et al.*¹⁵ Nine drawings, with figures ranging from very thin to very obese, were presented to the participants, who were asked to select a figure that corresponded with the following questions: 'A woman looks best when she is like ...', 'Right now I look like ...', and 'I would like to look like ...'.

Body satisfaction was assessed using the question: 'How do you feel about your current weight? Are you: very thin, somewhat thin, normal weight, overweight/obese or extremely obese?' Respondents were also asked if they would be happy if they gained more weight, and whether they had tried to lose weight in the past and what methods they had used.

Knowledge questions obtained information on causes and risk factors associated with obesity. Forty-two of the 44 CHWs were interviewed. Data were collected from September 2000 to May 2001. Ethical approval was obtained from the University of the Western Cape Ethics Committee. Informed consent was obtained from all participants.

Photography

The CHWs were given cameras to take photographs of foods available at local shops that they thought were contributing to the development of obesity. They were also provided with chicken and maize (mealie-meal) and asked to demonstrate how they would prepare and

serve these for their families. Photographs of food and actual portion sizes served by the CHWs were then taken. The aim was to identify any discrepancy between ideal (based on 3-D food models)¹⁶ and actual prepared portion sizes. The photographs were used to help CHWs reflect on their own situation during teaching sessions.

Statistical analysis

Data were analysed using the Statistical Package of Social Sciences (SPSS 9.0 for Windows). Body mass index (BMI) was calculated as weight in kg/height in m². Cut-off points were established for obesity at BMI 30 - 40 kg/m² and extreme obesity at > 40 kg/m² in accordance with the classification by the WHO.⁴ For waist circumference, cut-off points for obesity-associated complications were ≥ 80 cm (increased risk) and 88 cm (substantially increased risk).⁴ Descriptive statistics were calculated.

The focus group discussions were transcribed and translated into English. Information was then summarised and used in developing the interviewer questionnaire.

Results

Characteristics of the sample

Eighty per cent of the CHWs lived in informal shacks and 20% lived in formal housing. Their ages ranged between 28 and 60 years (mean 43.2 ± 7.2 years). The average level of education was Standard 8 (10 years of schooling). The time they had spent in the city was 20.1 ± 8.8 years, while the time they had been working as CHWs was 7.8 ± 3.7 years.

Anthropometric measurements

The mean values of anthropometric measurements are shown in Table I. The average BMI was 40 kg/m², ranging from 23.3 to 63.7 kg/m². Of the 44 CHWs measured, 2 were normal weight (BMI 18.5 - 24.9 kg/m²), 2 were overweight (BMI 25 - 29.9 kg/m²) and 40 were obese (BMI > 30 kg/m²). Of the 40 who were obese, 15 were extremely obese (BMI > 40 kg/m²).

Table I.	Anthropometric measurements of the CHWs (N = 44)		
	Mean ± SD	Range	Cut-off points for obesity ⁴
Height (m)	1.58 ± 0.06	1.46 - 1.75	–
Weight (kg)	99 ± 22	57 - 154	–
BMI (kg/m ²)	40.0 ± 8.1	23.3 - 63.7	≥ 30
Waist circumference (cm)	110 ± 16	72 - 138	≥ 80 cm: increased risk for metabolic complications of obesity ≥ 88 cm: substantially increased risk for metabolic complications of obesity

Focus group discussions

Acceptable shape and size for women

The CHWs felt that a woman should be round, and should feel herself when she moves. 'A woman should not be light, everyone should admire her movements.' This was imitated by inflating the shoulders to show roundness. One woman pointed to a moderately overweight woman (BMI 27 kg/m²) and said, 'This is what we mean by a proper woman, this woman is full, everyone sees that she is healthy and can do whatever work is required of her.'

Perceived causes of overweight

CHWs thought that eating the wrong food, and skipping breakfast caused overweight. 'We do not have time to eat in the morning as we have to make sure that our children are ready for school. We then eat too late and tend to overeat.' They mentioned that worries caused them to be overweight. 'We worry about our teenage children who do not respect us, and about our husbands who sleep with other women.' One woman said, 'We are big because we are poor. We do not earn much and so we are always in debt, and therefore only manage to buy cheap meat with lots of fats.' Childbirth, lack of exercise and family heritage were also mentioned as leading to overweight.

Perceived advantages of being overweight

A moderately overweight woman was considered to be acceptable, and was associated with dignity, respect, health, wealth, and strength. Some comments were, 'A woman needs big arms to cook a big pot of food' and 'What is good about overweight is that you can't be blown away by the wind easily'. An overweight woman was seen as being treated well by her husband, whereas being thin was associated with unhappiness or HIV/AIDS. Although some CHWs indicated that they would like to lose some weight, they definitely did not want to be thin. Despite the growing awareness of the negative health consequences of overweight, some preferred to be big rather than to be thin, stating, 'Once people see that you are losing weight they ask "do you have problems?". Some start calling you names thinking that you have HIV.'

Perceived disadvantages of overweight

While CHWs valued being overweight, they also recognised the constraints imposed by obesity such as, 'Being overweight does not look nice, people often think that you are pregnant', 'bigger clothes are more expensive and less pretty', 'the body is heavy to carry, leading to continuous fatigue'.

Perceived consequences of overweight

'Hi-hi' (high blood pressure), diabetes, heart disease, and arthritis were mentioned as consequences of overweight.

Attitudes about physical activity

The CHWs could not understand why people engaged in physical activity if they were not trying to lose weight. 'If we exercise, we will lose weight and what will people think about us?' One woman said, 'My husband won't allow me to walk in the streets wearing a tight exercising outfit.' Another said, 'I cannot stand the body pains after exercises.' Some regarded home visits as exercise, stating, 'We walk a lot while doing home visits as part of our work. This forms part of our exercises.'

Interviews

CHWs thought that when a woman was thin she was more popular, felt better about herself and was more attractive and healthier than when fat. Almost an equal number of CHWs thought that either being thin (34%) or being fat (32%) would make them look pretty (Table II). Fat people were viewed as dignified by a large percentage of CHWs.

Approximately 88% of the CHWs reported that they would be unhappy if they gained more weight. More than half (54.8%) of the CHWs had previously tried to lose weight. Those who had tried to lose weight had a significantly higher mean BMI than those who never tried to lose weight ($p = 0.028$). The methods used for attempting to lose weight included reduction of food intake (43.5%), slimming tablets (36.1%), boiling water (21.7%), exercise (17.4), herbal tea (13.0%) and lemon juice (8.7%).

Perceptions of body size

When the CHWs were asked a direct question about their perceptions of their own body weight (Table II) the responses differed from their perceptions about body weight in general (Table III). They thought that they would be attractive and healthier when they were thin, but other women would look better and more attractive when they were fat. The CHWs seemed to be familiar with three medical conditions associated with obesity/overweight.

Table IV compares the participants' perception of their own body weight with their actual BMIs. Seven per cent of the participants felt that they were somewhat thin (BMI 18.5 - 19.9 kg/m²), while according to their BMIs no one was thin. Approximately 45% perceived themselves to be overweight/obese or extremely overweight, while 95% were overweight and obese based on their BMIs. This indicates that two-thirds of the overweight CHWs did not perceive themselves as being overweight. In Table III most of the perceptions mentioned at the group discussions about being overweight are confirmed.

There was a significant difference between the BMIs of CHWs and their preferred body image ($p < 0.001$). There was also a significant difference between their

Table II. Attitudes of CHWs about their own body weight		
Question asked	Positive responses about thinness	Positive responses about fatness
Would being thin/fat make you*	<i>N</i> (%)	<i>N</i> (%)
Well-liked?	37 (88)	14 (33)
Feel better about yourself?	32 (77)	18 (43)
More attractive?	33 (77)	11 (27)
Look pretty?	14 (34)	13 (32)
Healthy?	37 (88)	10 (24)
Dignified?	–	31 (74)

*Subjects responded to both being thin and being fat.

Table III. Responses of CHWs on knowledge of diseases associated with overweight, and beliefs about body weight (N = 42)			
	Yes (%)	No (%)	Not sure (%)
Do overweight people suffer from:			
Heart disease	38 (91)	1 (3)	3 (6)
High blood pressure	39 (94)	1 (3)	1 (3)
Diabetes	38 (91)	1 (3)	3 (6)
Arthritis	28 (66)	4 (9)	11 (25)
Cancer	17 (41)	3 (6)	22 (53)
Liver disease	29 (69)	1 (3)	12 (28)
Is ... a disadvantage of being overweight?			
Waking up tired	40 (94)	1 (3)	1 (3)
A sore body	36 (85)	5 (12)	1 (3)
Running uneasily	37 (88)	4 (9)	1 (3)
Looking untidy	31 (74)	7 (18)	4 (9)
Do you think the following is true about a thin woman?			
She is sick	14 (33)	17 (40)	11 (27)
She has worries	24 (58)	14 (33)	4 (9)
Her husband doesn't treat her well	25 (60)	13 (31)	4 (9)
Is a woman who is overweight:			
Well-liked?	42 (100)	0	0
Proud of her movements?	42 (100)	0	0
Healthy?	42 (100)	0	0
Happy?	40 (94)	1 (3)	1 (3)

Table IV. Self-perceptions about body weight compared with actual BMI (N = 42)			
How do you feel about your current weight?	CHWs' responses N (%)	BMI categories	% overweight according to BMI
Very thin	0	< 18.5	0
Somewhat thin	3 (7)	18.5 - 19.9	0
Normal weight	20 (48)	18.5 - 24.9	4.7
Overweight/obese	11 (26)	25.0 - 34.9	4.7
Extremely obese	8 (19)	35.0 - 39.9	90.7

BMI and their ideal image of a woman ($p < 0.001$). In both cases, the CHWs chose a thinner body size than their actual BMI. Body-shape pictures showed that

CHWs preferred a thinner image than their current BMI, but not as thin as what they considered the 'ideal' body size for a woman.

The mean BMI of those who were extremely satisfied with their body was significantly lower than the mean BMI of those who were extremely dissatisfied ($p = 0.006$).

Most of the CHWs (88%) stated that they would not be happy if they gained more weight. More than half of them had tried to lose weight in the past by reducing their food intake or taking slimming tablets, while only a few mentioned doing physical exercises.

Photographs

Photographs taken of food at local shops show that a majority of these shops sold cheap, unhealthy foods with high fat content, including tripe, sausages, chicken skin, pig's feet, and fat cakes. Eighty per cent of the street vendors sold meat with a high fat content at very reasonable prices. Observations of cooking methods revealed unhealthy practices that included cooking chicken with its skin in 300 ml cooking oil. The portions served were extremely large, almost triple the size of the suggested servings.

Discussion

The study revealed that there is an extremely high prevalence of obesity in this group of CHWs. The majority of the sample had a BMI and waist circumference consistent with overweight or obesity according to WHO standards. The results indicate that the women in the study have a substantially increased risk of developing health complications related to obesity. This prevalence is extremely high compared with that of the Cape Peninsula BRISK Study,¹⁷ where the prevalence was 34.4%, and that of the national study of 1998 that reported a prevalence of 56.6% in South African women.¹ This difference could have been caused by the selected sample size of the current study, leading to an overestimation of obesity. Overweight was associated with happiness, dignity, respect, health, wealth and strength and being treated well by one's husband. These findings confirm those of Mvo *et al.*⁷ who reported that a large body size in black urban women was perceived to reflect affluence and happiness.

Less than half of the overweight women actually perceived themselves as being overweight, which is a matter of concern since they do not consider themselves at risk for CDL. Similar findings were reported in national and international surveys, which found that fewer women perceived themselves as obese than indicated by their actual BMIs.^{1,18}

Although they were aware of the negative factors associated with obesity, the CHWs preferred to be overweight because of the stigma associated with thinness (many thin people are HIV-positive). This is a concern because health workers are supposed to be

knowledgeable about health matters when educating the community. Therefore, the CHWs may be promoting unhealthy behaviours related to the knowledge, attitudes, and beliefs in the community.

CHWs believed that a thin woman feels better about herself. These findings are similar to those of Senekal *et al.*¹⁹ who reported that clinically obese black girls were dissatisfied with their weight and desired weight loss. More than half of the CHWs had tried to lose weight in the past by means of reducing their food intake or taking slimming tablets, while only a few mentioned doing physical exercise. The changing perceptions about body weight may be due to media influences, which portray thin images as attractive. The changing perceptions about body weight are confirmed by a recent report on a study undertaken among black women in rural South Africa, which revealed high levels of body dissatisfaction and disordered eating attitudes among this population group.²⁰

CHWs generally valued a moderately obese woman but at the same time thought it would be more desirable if they were thin. This shows the effects of media influences on body dissatisfaction. While in a black culture, especially in the older generation, a woman is admired if she has some padding over the hips, women who are exposed to media images, which portray thin women as attractive, become confused. They tend to want to be both. On the one hand they want to be what they are supposed to be according to their own cultural values, on the other hand they want to conform to values of other cultures. This leads to body dissatisfaction and dieting behaviours. This is evident in a study of eating attitudes and behaviours associated with body image among South African girls, which revealed the prevalence of eating disorders among black subjects.^{21,22}

Consuming food in excess of the body's needs may lead to undesirable health outcomes, especially overweight/obesity. The present study confirmed the consumption of large portion sizes among the study subjects. In some populations, especially the poor, food is not measured and people eat as they can. In this way a message is sent to say that one can afford to buy large amounts of food.

A strength of this study was the fact that the principal investigator shared the cultural background of the CHWs. Before the data-collection process she established a relationship with them and they trusted her, sharing information that they might not have felt free to tell other people. Although the findings were significant they should, however, be interpreted with caution because of the small sample size.

A possible explanation for why such a large percentage of CHWs were overweight is that they were selected by the community as health promoters. Since overweight women are regarded as being healthy and strong,

community members' preference for heavier women could have played a role in the selection of these women. CHWs supposedly have more knowledge than the average population of Khayelitsha. For this reason, extrapolation of the current results to the broader population of Khayelitsha or South Africa may not be appropriate.

The secondary aim of the discussions was to obtain information that could be used to develop a questionnaire for interviews; therefore, two focus groups were specifically used, instead of continuing until saturation was reached (i.e. the discussion points were exhausted).

Although this is a small study, it demonstrates the importance of identifying beliefs and attitudes of health workers as these may influence their behaviour, and the behaviour of the people with whom they come into contact in their community.

This project was initially funded by Christian Aids in London and partially funded by the Provincial Administration of the Western Cape. The authors would like to acknowledge all the CHWs who were involved in the study, including their co-ordinator Nomonde Mahote. We also thank Nonkqubela Bantubani, Jabu Zulu, Brenda Nyalasa, Janette de Goede and Barbara van der Meij for assistance with the training of CHWs and data collection. Professor N J Temple is acknowledged for valuable assistance with editing this paper.

1. Puoane T, Steyn K, Bradshaw D, et al. Obesity in South Africa: The South African demographic and health survey. *Obes Res* 2002; **10**: 1038-1048.
2. Must A, Spadano J, Coakley EH, Field AE, Colditz G, Dietz WH. The disease burden associated with overweight and obesity. *JAMA* 1999; **282**: 1523-1529.
3. Allison DB, Zannolli R, Narayan KMV. The direct health care costs of obesity in the United States. *Am J Public Health* 1999; **89**: 1194-1199.
4. World Health Organization. Obesity: preventing and managing the global epidemic. *World Health Organ Tech Rep Ser* 2000; No. 894.
5. Ball K, Mishra G, Crawford D. Which aspects of socioeconomic status are related to obesity among men and women? *Int J Obes Relat Metab Disord* 2002; **26**: 559-565.
6. Kumanyika SK. Special issues regarding obesity in minority populations. *Ann Intern Med* 1993; **119**: 650-654.
7. Mvo Z, Dick J, Steyn K. Perceptions of overweight African women about acceptable body size of women and children. *Curatiosis* 1999; **22**: 27-31.
8. Margetts BM, Rogers E, Widhal K, Remaut de Winter AM, Zunft HJ. Relationship between attitudes to health, body weight and physical activity and level of physical activity in a nationally representative sample in the European Union. *Public Health Nutrition* 1999; **2**(1a): 97-103.
9. World Health Organization. Strengthening the performances of community health workers in primary health care. Report of a WHO Study Group. *World Health Organ Tech Rep Ser* 1989; No. 780.
10. Cash TF, Morrow JA, Hrabosky JI, Perry AA. How has body image changed? A cross-sectional investigation of college women and men from 1983 to 2001. *J Consult Clin Psychol* 2004; **72**: 1081-1089.
11. Editors of the American Heritage Dictionary. *Roger's II: The New Thesaurus*. 3rd ed. Boston: Houghton Mifflin, 1995.
12. Ajzen I, Fishbein M. *Understanding Attitudes and Predicting Social Behavior*. Englewood Cliffs, NJ: Prentice Hall, 1980.
13. The Social Economy of Khayelitsha 2002. Demographic Information. http://www.local.gov.za/DCD/ledsummary/khayelitsha/social_economy.html (last accessed 19 January 2005).
14. Rose GA, Blackburn H, Gillum RF, Prineas RJ. *Cardiovascular Survey Methods*. 2nd ed. Geneva: World Health Organization (Monograph series No 56), 1982.
15. Stunkard ET, Sorenson T, Schlusinger T. Use of the Danish adoption register for the study of obesity and thinness. In: Kelly SS, Rowland LP, Sidman RL, Matyys SW, eds. *Genetics of Neurological and Psychiatric Disorders*. New York: Raven Press, 1983: 115-129.
16. Cypel YS, Guenther PM, Petot GJ. Validity of portion size measurements aids: a review. *J Am Diet Assoc* 1997; **97**: 289-292.
17. Steyn K, Bourne L, Jooste P, Fourie JM, Rossouw K, Lombard C. Anthropometric profile of a black population of the Cape Peninsula in South Africa. *East Afr Med J* 1998; **75**: 35-40.
18. Dawson DA. Ethnic differences in female overweight: data from the 1985 National Health Interview Survey. *Am J Public Health* 1988; **78**: 1326-1329.
19. Senekal M, Steyn NP, Mashego TB, Nel JH. Evaluation of body shape, eating disorders and weight management related parameters in black female students of rural and urban origins. *South African Journal of Psychology* 2001; **31**: 45-53.
20. Seed J. Western images lead to changes in body shape in South Africa. <http://www.innovations-report.de/html/berichte/gesellschaftswissenschaften/bericht-28083.html> (last accessed 19 January 2005).
21. Le Grange, D, Telch CF, Tibbs J. Eating attitudes and behaviours in 1 435 South African Caucasian and non-Caucasian college students. *Am J Psychiatry* 1998; **155**: 250-254.
22. Caradas AA, Lambert EV, Charlton, KE. Ethnic comparison of eating attitudes and associated body image concerns in South African schoolgirls. *J Hum Nutr Diet* 2001; **14**: 111-120.