Introduction
Worldwide obesity has more than doubled since 1980. By 2014, more than 1.9 billion adults, aged 18 years and older, were overweight and of these over 600 million were obese. Overweight and obesity are defined as abnormal or excessive fat accumulation in adipose tissue. The body mass index (BMI) is a simple index of weight-to-height that is commonly used to classify overweight and obesity in adults. It is defined as a person's weight in kg divided by the square of their height in meters (kg/m²). The WHO defines a BMI of > 25 kg/m² as overweight and a BMI > 30 kg/m² as obese. Globally the proportion of adults with a BMI > 25 kg/m² increased between the years 1980 and 2013 from 28.8% to 36.9% in men and from 29.8% to 38% in women. In South Africa 7 in 10 women (69.3%) and 4 in 10 men (38.8%) are overweight or obese. South African children are showing a similar pattern with 7% of boys and 9.6% of girls classified as obese.

Almost half the population in developed countries is obese. This is particularly prevalent in countries where a sedentary lifestyle together with an increased consumption of energy-rich, high-fat and high carbohydrate foods has resulted in obesity. However, the rates vary widely throughout the world with more than half of the world’s 671 million obese individuals living in just 10 countries: the USA, China, India, Russia, Brazil, Mexico, Egypt, Germany, Pakistan, and Indonesia. Developing countries, particularly those undergoing an epidemiological transition similar to South Africa, also show an increase in the prevalence of obesity with the overall prevalence in South Africa being higher than in most other African countries. The prevalence in South Africa is 29% of men and 56% of women are classified as overweight or obese. Of these obese women, 30% are aged between 30 and 59 years. Recent South African studies show a change in prevalence associated with ethnicity and age. Central obesity was found in 42.2% of women and was most prevalent in urban Black African and women of mixed ancestry whereas only 9.2% of the men had central obesity with older and white males having the highest prevalence.

Overweight and obesity is a major contributor to the global burden of non-communicable diseases (NCDs) and the associated morbidity and mortality. In common with other African countries, South Africa (SA) is currently encountering an increasing burden of NCDs associated with overweight and obesity. In SA the burden of disease attributed to obesity is 87% for type 2 diabetes, 68% for hypertensive disease, 61% for endometrial cancer and 24% for osteoarthritis.

Determinants of the obesity epidemic are complex and therefore patients’ perceptions regarding a preferred body image are important to help educate the patient regarding the association of obesity with the morbidity or mortality related to NCDs. In SA, in addition to the usual contributory factors for obesity in women, the perceptions of black women preferring a larger body size constitute an important additional factor. Being overweight is culturally acceptable and is seen as a sign of economic prosperity and a happy marriage. Perceptions not only reflect people’s views and thoughts but are ideas that exist in the minds of people about how they are viewed by others. This influences their actions, behaviour and lifestyles and has been documented as a barrier to weight loss. In a recent study, participants associated thinness with being afflicted by HIV. In an exploratory study conducted on black women attending the NCD outpatient clinic at a hospital in Durban, South Africa, it was shown that the women underestimated their actual weight and perceived themselves to be thinner.

This is one of the barriers to patients losing weight. Thus this study aimed to describe perceptions of weight in overweight and obese patients in order to assess whether a weight loss programme was implementable in these two groups of people.

Methodology
Design
This was a descriptive, observational study conducted in a sample of 100 overweight or obese patients, i.e. with a BMI > 25 kg/m² in a private general practice situated in a peri-urban area north of Durban. The demographic profile of the
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patients attending the practice is 60% Zulu and 25% of Indian origin with the remaining 15% being white, coloured, Swazi and Xhosa.

A convenience sampling method was used where all obese or overweight patients who attended the practice between March and April 2014 were informed of the study. The first consecutive 100 overweight or obese patients to participate in the study voluntarily were recruited. The volunteers completed an informed consent form and a questionnaire that contained socio-demographic data, and perceptions of body weight in respect of diet, exercise, chronic illness, smoking and alcohol intake.

**Measures**

A questionnaire was designed detailing socio-demographic details, medical history, and patients’ perceptions of and knowledge of obesity and weight loss. The questionnaires were conducted in English as all the participants were conversant in English.

**Statistical analysis**

The data were coded and captured in Microsoft Excel™ (Microsoft Corp, Redmond, WA, USA) and then transferred into Statistical Package for Social Science (SPSS v. 22™; IBM Corp, Armonk, NY,USA) for further analyses such as group comparison (t-test), descriptive and inferential statistics (correlation test and chi-square test). The t-test and inferential statistics were estimated with a p-value of < 0.05 showing statistical significance.

**Ethical considerations**

The Ethics Committee of the Faculty of Health Sciences at the University of KwaZulu-Natal approved the study (BREC NUMBER: BE 239/13). Confidentiality was assured by participants being allocated a code and their identity remained anonymous. Data were stored in a locked cabinet. The collated data were password locked.

**Results**

The sample comprised 100 participants attending a private general practice on the north coast of KwaZulu-Natal. Their ages ranged from 18 to 76 years with 82% being under 60 years of age. Some 26% of the patients were aged 18 to 30 years while 46.9% were between 41 and 60 years old.

The mean BMI of the males was 41.7 kg/m² (SD = 7.38112) and females was 39.9 kg/m² (SD = 7.90504). The BMI distribution was 6% with a BMI 25–30 kg/m² and 94% above 30 kg/m². In total 18% were males and 82% were females of which 30% were of Indian origin and 64% were Zulu. Seventy-nine of the total participants had either a grade 12 or a tertiary qualification and 52% of the sample stated as their occupation that they were professionals. In all, 77% perceived that overweight and obese people were discriminated against. Of the 100 patients interviewed, 60% would have liked to lose weight and 15% were happy with their weight. When the patients were asked about reasons for obesity, 70% cited by choice as the commonest reason; other reasons were: a sign of wealth and marital bliss, pressure from their partner and fear of HIV stigma.

Tables 1 and 2 describe the views and perceptions of obesity in overweight and obese patients in relation to their actual BMI. Of the patients with a BMI in the range of obese, 79% saw themselves as being overweight and 17% of those with a BMI > 25 kg/m² saw themselves as having a normal weight (Table 1).

| Factor | How do you see yourself? (%) | Total (%) |
|--------|-------------------------------|-----------|
| Overweight | Normal weight |
| 25–30 | 4.0 | 2.0 | 6.0 |
| 31–35 | 21.0 | 9.0 | 30.0 |
| 36–40 | 20.0 | 4.0 | 24.0 |

| Actual body mass index (kg/m²) | Total (%) |
|--------------------------------|-----------|
| 41–45 | 18.0 |
| 46–50 | 12.0 |
| 51–55 | 7.0 |
| > 60 | 1.0 |
| Total | 83.0% | 17.0 | 100.0 |

| Factor | Are you happy with your weight? (%) | Total (%) |
|--------|-----------------------------------|-----------|
| Yes | No | Not sure |
| 25–30 | 1.0 | 4.0 | 1.0 | 6.0 |
| 31–35 | 9.0 | 20.0 | 1.0 | 30.0 |
| 36–40 | 4.0 | 20.0 | 24.0 |

| Actual body mass index | Total (%) |
|-----------------------|-----------|
| 41–45 | 18.0 |
| 46–50 | 1.0 |
| 51–55 | 8.0 |
| > 60 | 1.0 |
| Total | 15.0 | 83.0 | 2.0 | 100.0 |
Patients’ attitudes towards their weight showed that 83% were not happy with their weight and only 15% were happy with their weight, with the majority between the ages of 31 and 40 years old (Table 2).

Table 3 looks at the patients’ knowledge regarding the medical risks of obesity. A positive relationship was detected between the perception of obesity as a health risk and the knowledge of their medical condition, showing that people who consider obesity as a health risk are more likely to know about their medical condition (p-value = 0.000), and the level of association between the two variables is very high because Cramer’s V = 1 (Tables 3 and 4).

Table 4 shows the statistical significance of the association between the perceptions of obesity as a health risk. There was a statistically significant outcome (p = 0.000) between their perception of obesity as a health risk and the knowledge of their medical condition (Table 4).
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Tables 8 and 9 describe the relationship between BMI, diabetes and hypertension in the overweight and obese participants.

Of the total population interviewed 78% have a BMI between 25 and 45 kg/m² with only 18% presenting with diabetes mellitus (Table 8) and 35% with hypertension (Table 9).

Pearson’s chi-square was 0.774 and therefore not statistically significant. This supports the null hypothesis showing no association between patients’ BMI and being a person with diabetes. Table 9 presents the sample distribution of BMI with and without hypertension. A statistically significant relationship ($\rho = 0.046$) was observed, indicating an association between BMI and hypertension. The effect size of this association is large, i.e. greater than 0.06, suggesting that the correlation between BMI and hypertension is highly significant.

Tables 5–7 describe the views and perceptions of obesity in overweight and obese patients by differences in ethnicity, gender and educational levels. Although a statistically non-significant result was obtained between perceptions of obesity and ethnicity, 61% of patients of Zulu descent and 30% of patients of Indian descent did not feel that being overweight or obese was unattractive (Table 5). There was no statistically significant outcome in the patients’ perception of obesity when correlated with ethnicity, gender and education.

The majority of the patients knew that they were large — about 99% of the females and about 89% of the males — with a total of 97% believing that they are not unattractive (Table 6).

In this cohort of participants 91% noted that they were large with about 79% having either matric or tertiary educational level.

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### Table 7: Perceptions of obesity and education

| Education      | Large Yes (n, %) | Large No (n, %) | Unattractive Yes (n, %) | Unattractive No (n, %) |
|----------------|------------------|------------------|-------------------------|------------------------|
| No formal      | 1 1.10 100.0     | 0 0.00 0.00      | 0 0.00 0.00             | 1 1.03 100            |
| Primary        | 17 18.68 94.44   | 1 11.11 5.56     | 1 33.33 5.56            | 17 17.53 94.44        |
| Matric         | 36 39.56 92.31   | 3 33.3 7.69      | 2 66.67 5.13            | 37 38.14 94.87        |
| Tertiary       | 36 39.56 90.0    | 4 44.44 10.0     | 0 0.00 0.00             | 40 41.24 100          |
| Other          | 1 1.10 50        | 1 11.11 50.0     | 0 0.00 0.00             | 2 2.06 100            |
| Total          | 91 100.00 91.0   | 9 100.0 9.0      | 3 100.00 3.0            | 97 100.00 97.00       |

### Table 8: Comparison between BMI and diabetes

| Factor          | Do you have diabetes mellitus (%) | Total (%) |
|-----------------|-----------------------------------|-----------|
|                 | Yes (n, %)                        | No (n, %) |
| 25–30           | 6.0                               | 6.0       |
| 31–35           | 6.0                               | 24.0      | 30.0      |
| 36–40           | 4.0                               | 20.0      | 24.0      |
| Body mass index |                                   |           |
| 41–45           | 3.0                               | 15.0      | 18.0      |
| 46–50           | 4.0                               | 9.0       | 13.0      |
| 51–55           | 1.0                               | 7.0       | 8.0       |
| > 60            | 1.0                               | 1.0       | 1.0       |
| Total, n = 100  | 18.0                              | 82.0      | 100.0     |

### Table 9: Comparison between BMI and hypertension

| Factor          | Do you have hypertension (%) | Total (%) |
|-----------------|-------------------------------|-----------|
|                 | Yes (n, %)                    | No (n, %) |
| 25–30           | 6.0                           | 6.0       |
| 31–35           | 8.0                           | 22.0      | 30.0      |
| 36–40           | 7.0                           | 17.0      | 24.0      |
| Body mass index |                                |           |
| 41–45           | 7.0                           | 11.0      | 18.0      |
| 46–50           | 6.0                           | 7.0       | 13.0      |
| 51–55           | 6.0                           | 2.0       | 8.0       |
| > 60            | 1.0                           | 1.0       | 1.0       |
| Total, n = 100  | 35.0                          | 65.0      | 100.0     |
Discussion
This study aimed to assess patients’ perceptions of weight in overweight and obese patients. The mean BMI for males was 41.7 kg/m² and for females was 39.9 kg/m². The global and local prevalence rates noted females to be obese and males to be defined as being overweight.1,2 Post-1994, South Africa has been undergoing an economic transition and urbanisation. In a study conducted by Popkin (1994), it was described that emerging economies showed an increased rate of obesity.17 The commonest positive perceptions of obesity were related to being economically successful, and to respect and dignity.6,13–15 These were some of the findings in this study. Previous local studies that looked at perceived body weight were almost exclusively conducted amongst women, particularly black African women.6,13–15 The results in this study show that this is not exclusive to black South African women and included both people of Indian descent and males.

Obesity has reached epidemic proportions globally and South Africa has the highest prevalence in sub-Saharan Africa.2 It is well documented that obesity is a risk factor for diabetes and hypertension. Therefore it is no surprise that diabetes and hypertension are growing exponentially as well.16–18 If all these factors are interlinked and obesity is the common cause, how do health care professionals promote weight reduction when there are strong positive perceptions19 creating barriers and challenges? Although the commonest reason in this study for their overweight and obesity is by choice, 60% of patients stated that they would like to lose weight and 83% were not unhappy with their weight. This highlights the opposing and confusing issues relating to being overweight and obese in the South African context.

While health care professionals used objective ways, namely BMI, to define an ideal weight, it is clear that South African black women are more likely to base their ideal weight on cultural criteria.16–18 This perception is supported by previous local studies where a multitude of factors contributed to this, from being considered socially upwardly mobile, as contributing to happiness, to being HIV-negative.5,16,17 The results in this study confirm that 17% of overweight and obese patients saw themselves as having a normal weight and 97% felt that they were attractive. This positive body image was noted in all ethnic groups interviewed. A large group of Indian patients also noted a positive body image. This study, although exploratory, for the first time shows that a positive body image has been documented in males as well as in other ethnic groups. In addition they did not view obesity as cause for concern when it came to their health even though they understood the strong association between obesity and their chronic medical condition. This is a worrying concern when we know that the burden of NCDs in our society is putting a strain on the health resources.

Limitations of the study
This study was conducted in a peri-urban private general practice with a convenience sampling method. Therefore generalisability to different sites cannot be extrapolated. The study did not assess HIV or TB status, which may have influenced perceptions concerning obesity.

Key findings and conclusion
Overweight and obesity is a major public health problem and managing this involves both lifestyle and behavioural change. This study provided an insight into patients’ lifestyles, views, knowledge and the reality as they see and live it. Therefore it is imperative that researchers and healthcare providers understand how people from different cultures and ethnicities view obesity as this will help them promote key messages about the health risks associated with excess weight in a culturally sensitive way.

Conflict of interest – None.

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