Body composition of different ethnic groups in South Africa

AJS Benadé DSc, A Oelofse MSc, M Faber MSc

National Research Programme for Nutritional Intervention, Medical Research Council, Tygerberg, South Africa

South Africa is in a state of nutrition transition. As with other societies this is reflected in the emergence of overfatness, sometimes in conjunction with protein malnutrition. These phenomena may be expressed differently in a multi-ethnic society like South Africa with its major ethnic groups (Blacks, Whites, Coloureds and Indians) having varied socio-economic status. National population-based studies of coronary risk factors between 1979 and 1991 have been accessed for anthropometric data as weight and height. Cut-off points for overweight have been applied, to children to age 10 as weight-for-height greater than two Z scores by NCHS reference standards, and to those older than 15 and up to 64 years of age, BMI ≥25 and < 30, and obese ≥ 30 kg/m^2. Data have been stratified by ethnicity, age, gender and place of residence (urban or rural) Urban Black children seem already to have a problem of overweight with a prevalence of 6-18%. For men, urban Whites have the highest prevalence of both overweight (50% in the 45-54 age group) and obesity (20% in the 55-64 age group) in all age groups except the 55-64 age groups for obesity, where Blacks have the higher prevalence (about 29%). Interestingly, the prevalence of overweight in rural women overall (39-52%) exceeds that for urban women (23-31%), although this is not the case for obesity, (prevalence age 25 and beyond, rural 24-39% and urban, 25-60%) where, indeed, in the 45-54 and 55-64 age groups, the urban prevalence exceeds the rural. This raises questions about the factors which reduce or facilitate the transition from overweight to obesity. Urban Black women seem at particular risk of this overweight-to-obesity shift and are known to have a very energy-dense diet. The extent to which overfatness contributes to other coronary risk factors is worth further investigation, given this appears to be less for Blacks than other ethnic groups.

Key Words: Body composition, ethnicity, South Africa, overweight, obesity, children, adults

Introduction

Overweight and obesity are known to be related to degenerative diseases such as atherosclerotic cardiovascular disease, hypertension, diabetes mellitus, gall-bladder disease and certain cancers. Anthropometric information from several South African studies indicates a high prevalence of overweight and obesity in adult males and females from various population groups residing in both urban and rural areas. Although early evidence of overweight and obesity is also evident in children younger than five years, undernutrition, as manifested by the presence of underweight and retarded growth, appears to be the major nutritional problem in this age group in South Africa.

This article uses available anthropometric information from various studies conducted in South Africa to obtain a comprehensive picture of the prevalence of overnutrition in South Africa.

Methods

Prevalence data for overweight and obesity in different population groups in South Africa were obtained from four major studies conducted between 1979 and 1991. These studies were primarily conducted to assess the coronary risk factor profiles of four main population groups in South Africa, namely Blacks (BRISK study)[1], Whites (KORIS study)[2], Coloureds (CRISIC study)[3], and Indians[4]. Information pertaining to children under five years of age was obtained from unpublished studies recently conducted by the Medical Research Council[5].

Criteria for estimating overweight and obesity in the various age groups were as follows:

- 0-10 years age group: Weight-for-height exceeding 2 Z scores, according to the NCHS reference standards, was considered to be overweight.
- Adolescents and adults: Body mass index (BMI) was calculated as weight (kg)/height^2 (m). Cut-off points for obesity were BMI ≥30 for all subjects and for overweight at 30 >BMI ≥25 for men and 30 >BMI ≥24 for women.

Results are presented as the percentage of individuals overweight or obese according to the above criteria and for the various racial groups residing in rural or urban areas.

Results

Age group 0-10 years: The limited information available for this group suggests that between 2 and 10% of urban Coloured children and between 6 and 18% of urban Black children are either overweight or obese (Figures 1 and 2).

Overweight in the 15-64 year age group (Figures 3 and 4): The prevalence of overweight shows a clear tendency to increase with age in all ethnic groups, in both males and females. The prevalence of overweight was highest in White males for all age groups, while the prevalence of overweight among Indian women exceeded that for the other ethnic groups in the 35-64 year age group.

Figure 5 shows the prevalence of overweightness in urban and rural females. The prevalence of overweightness among rural women is almost double that observed in urban women.

Prevalence of obesity: Obesity tends to increase with age in both males and females (Figures 6 and 7). The prevalence of

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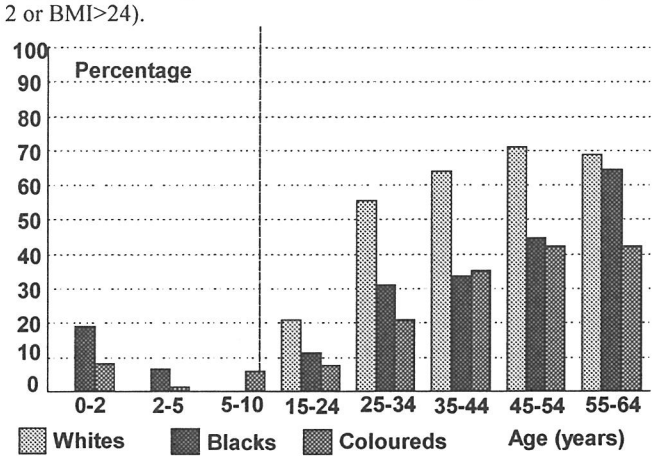
Correspondence address: AJS Benadé , National Research Programme for Nutritional Intervention, Medical Research Council, PO Box 19070, Tygerberg 7505 South Africa
Tel: +27-21-938-0409; Fax: +27-21-938-0321
Email: SBENADE@eagle.mrc.ac.za

obesity in women was about two to three times higher than that found in men. More Black and Coloured women were found to be obese than either White or Indian women.

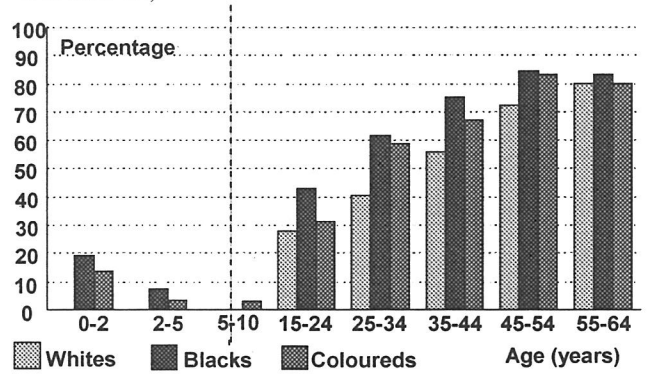
When prevalence rates for obesity among rural and urban Black women were compared, far more urban than rural women were found to be obese, especially after the age of 45 years (Figure 8).

Figure 1. Percentage urban males either overweight or obese. (Z > 2 or BMI>24).



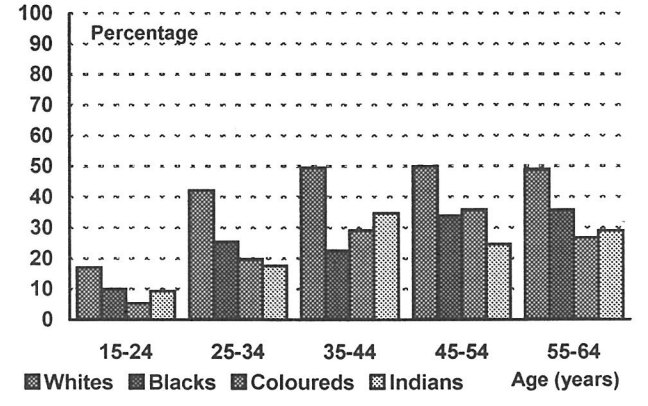
Whites: no children; >15 years: KORIS;
Blacks: children: Kayamandi / >15 years: BRISK;
Coloureds: children: Scottsville/Cloetesville / >15 years: CRISIC

Figure 2. Percentage urban females either overweight or obese. (Z > 2 or BMI>24)



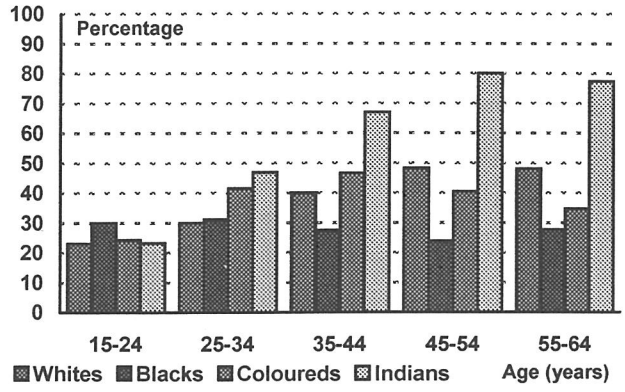
Whites: no children; >15 years: KORIS Blacks: children: Kayamandi / >15 years: BRISK Coloureds: children: Scottsville/Cloetesville / >15 years: CRISIC

Figure 3. Percentage urban overweight males. (BMI between 25 and 30)



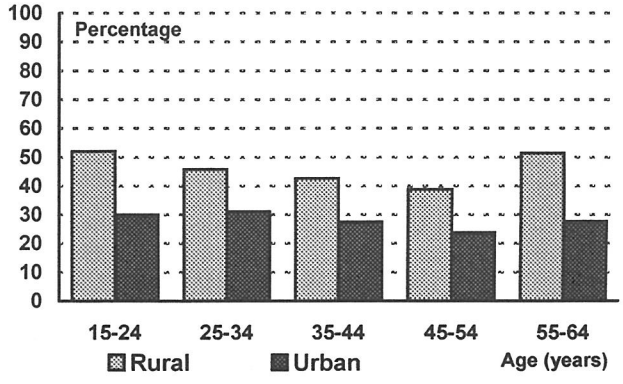
Whites: KORIS; Blacks: BRISK; Coloureds: CRISIC

Figure 4. Percentage urban overweight females. (BMI between 24 and 30)



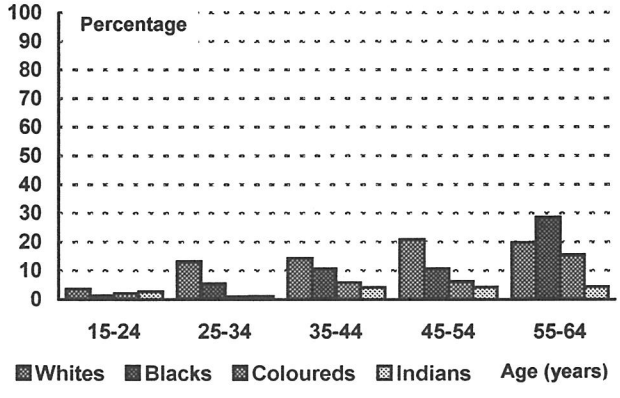
Whites: KORIS; Blacks: BRISK; Coloureds: CRISIC

Figure 5. Percentage urban versus rural overweight females (BMI between 24 and 30)



Rural: Ndunakazi; Urban: BRISK

Figure 6. Percentage urban obese males (BMI > 30)



Whites: KORIS; Blacks: BRISK; Coloureds: CRISIC

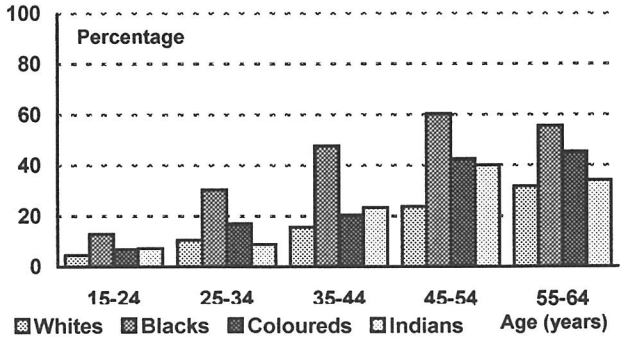
Discussion

A feature of the results reported by the different South African studies on different ethnic groups is the increase in the prevalence of both overweight and obesity with age in both males and females. In males and females of all ethnic groups, overweight was found to increase about two-fold after the age of 25. The prevalence of overweight was found to be very similar in males and females after the age of 25, apart from Blacks. It is interesting to note that although more White males were overweight than any of the other groups, Indian women had a prevalence rate of overweight almost double that observed in White women[2,4] of 25 years and older.

Obesity was found to be rare in males of all ethnic groups. More women than men tended to become obese as they grew

older. The highest prevalence of obesity was found among the Black and Coloured groups, especially after the age of 25 years.

Figure 7. Percentage urban obese females (BMI > 30)

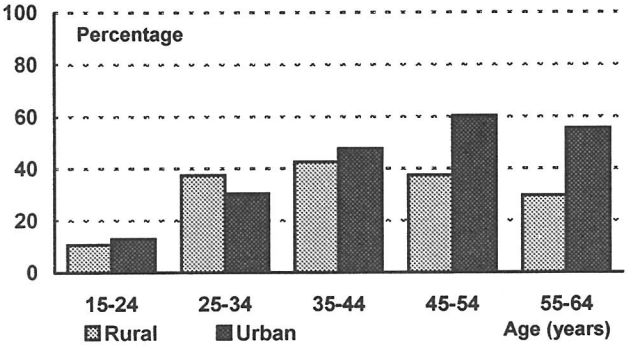


Whites: KORIS; Blacks: BRISK; Coloureds: CRISIC

An interesting feature of our data is the higher prevalence of obesity among urban Black women after middle age, as compared to rural Black women of the same age range. Although the reason for this is not known, changes in dietary and exercise patterns associated with urbanisation are likely explanations. Urbanised Blacks are known to consume a much more energy-dense diet[6] than rural populations[7]. If more energy-dense food is consumed by the already overweight progress to obesity is more likely.

Although some relationship appears to exist between overweight/obesity and certain risk factors for cardiovascular disease, such as elevated blood cholesterol and high blood pressure in White males and females, Black males and females have lower prevalence rates for all three major risk factors compared with Whites, Indians and Coloureds[1]. The high prevalence of overweight and obesity in Blacks therefore does not appear to be associated with an increase in the prevalence of risk factors for coronary heart disease as observed in the other population groups. This issue should be investigated further.

Figure 8. Percentage urban versus rural obese females (BMI > 30)



Rural: Ndunakazi; Urban: BRISK

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南非各民族的身体成份

南非正处在一个营养变革的时期，与其他国家相比，表现为过渡肥胖的出现，有时还有蛋白质营养不良．这些现象在象南非这样多民族的社会里有不同的表现，南非几个主要民族（黑人、白人、有色人种和印地安人）的社会经济地位不同．１９７８－１９９１年在南非全国进行了人体测量资料心血管疾病危险因素的评估研究，该研究定出了超重的界值：对于１０岁以下的儿童，超过ＮＣＨＳ参考标准２以上为超重；对于１５－６４岁的人，３０>BMI>＝２５为超重，BMI>30公斤/平方米为肥胖．资料按种族、年龄、性别和居住地（城市和农村）进行了分类，显然城市儿童存在超重的问题，发生率为６－１８％，在男性，在５５－６４岁年龄组黑人的肥胖率最高（约为２９％），而在此外的其他年龄组中，城市白人的超重率（４５－５４岁组为５０％）和肥胖率（５５－６４岁组为２０％）最高．有趣的是，农村妇女的超重率（35－52％）远远高于城市妇女（２３－３１％），但肥胖率却非如此（在２５及以上的年龄组中，农村的肥胖率为２４－３９％，城市的肥胖率为２５－６０％），在４５－５４和５５－６４岁组，城市妇女的肥胖率远远高于农村妇女，这就引出了这样一个问题：哪些因素能够促进超重到肥胖的转变，哪些因素能够抑制这种转变．看来城市黑人妇女由超重转为肥胖的危险性很高，已经发现她们食用高热能的膳食．对于黑人的研究显然比对其他种族的研究要少，因而还值得进一步研究超重对于其他心血管疾病危险因素的影响。

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