

Healthy dietary practices among rural and semi-urban Blacks in the Northern Province of South Africa

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Abstract

The aim of the study was to investigate five healthy dietary behaviours in a sample of rural and semi-urban South Africans. The sample consisted of 200 adults, 100 from an semi-urban area (Mankweng) and 100 from a rural area (Tiberius) in the central region of the Northern Province of South Africa. The two geographically different communities were chosen by convenience and the participants in the two communities were chosen by cluster sampling. Results indicate that about a third (30% in semi-urban and 34% in rural) of the study sample are overweight and 18% are obese. A moderately high prevalence of six simple healthy dietary practices was found. However, there was a very low prevalence rate of eating fruits daily among both semi-urban (10%) and rural dwellers (9%). Semi-urban dwellers showed significantly higher healthy diet behaviour than rural dwellers in regard to avoiding fat, trying to eat fiber, limiting red meat, and limiting salt. Men reported more than women that they tried to eat fiber and they had more often breakfast everyday. Being semi-urban and female were significantly associated with the healthy dietary index, whereas age, BMI, educational level and marital status were not. The results give insight into dietary health behaviour practices and the factors that influence them, which have practical implications for dietary health promotion.

Introduction

The link between diet and chronic diseases such as cancer and cardiovascular disorders has been well recognised worldwide (WHO, 1990: 10ff.). Overweight and high-serum cholesterol levels, hypertension, and osteoporosis (i.e., decreased bone mass) increase the risk of cardiovascular disorders, stroke, and bone fracture, respectively (Edelman & Mandle, 1998: 155f.).

As assessed by a national demographic and health survey, approximately 28% of men and 55% of women were overweight or obese in South Africa. In men, overweight and obesity occur more frequently in the urban setting than in the non-urban setting. White men and the most educated men are the most overweight or obese of all men. For women, the overweight patterns do not differ much between urban and non-urban, although urban women tended to be more obese. Women with the lowest level of education seemed to be the most obese, although this may be a function of age. African urban women have the highest rate of obesity, while Asian women have the lowest rate. Obesity has been found in a number of studies in all ethnic groups to predict the development of hypertension and diabetes. The findings call for the control of obesity as a focus of community-based intervention programmes in South Africa (Medical Research Council, 1998: 15ff.).

Similarly to the US, many urban South Africans consume too many calories and too much fat (especially saturated fat), cholesterol, and sodium. Large meals consisting of high-kilojoule foods, and between-meal snacks, are the two dietary habits which are most often responsible for obesity in individuals and families. Ignorance of kilojoule value of various foods is to some extent a contributory factor, so is poverty, for families with limited incomes have to buy cheap foods and as these

usually consist of carbohydrates they are more likely to lead to overweight than proteins. They also consume insufficient complex carbohydrates and fiber. Such diets are one cause of high rates of obesity and diseases such as heart disease, high blood pressure, stroke, diabetes, and some forms of cancer. Recommendations to restrict salt and fat intake and increase complex carbohydrate and fiber consumption are central tenets in public health nutrition guidelines (De Haan 1993: 15f., Edelman & Mandle, 1998: 156f.).

In a recently nationally representative survey the Medical Research Council (1998: 21f.) found that among persons above 15 years 11% of men and 13% of women were found to either have a blood pressure above 160/95mmHg or were taking appropriate medication to lower their blood pressure. A calculation based on these prevalence rates and the census figures published for the South African population 15 years and older leads to an estimate of about 3.3 million hypertensive people in the country.

While the full etiology of any of these chronic diseases have yet to be understood, behavioural factors such as tobacco use, exercise, diet, alcohol consumption and preventive health checks are strongly implicated as risk factors (Steptoe & Wardle 1992: 486). Overconsumption of dietary fats, sugar and salt, and lack of fiber in the diet may lead to a number of chronic diseases including coronary heart disease and some cancers (Furie & Steyn 1995: 5f.). Steyn, Langenhoven, Joubert et al. (1990: 63) indicate the influence of dietary factors in serum cholesterol values among the coloured population of the Cape Peninsula in South Africa.

The purpose of this study was to determine the prevalence of healthy dietary behaviour among rural and semi-urban Black South Africans and to measure its relationship with sociodemographic variables, body mass index, and body weight perception of healthy diet patterns. Results may give

insights on what dietary behaviour may be related to overweight or obesity among a sample of rural and semi-urban Black South Africans. Consequently, simple dietary messages could be developed and included in health promotion programmes. It would also be of interest to know whether some of the dietary behaviours differ between rural and semi-urban dwellers. It may be anticipated that semi-urban dwellers may have adapted due to transition and urban life style different dietary behaviours. Differences between rural and semi-urban dwellers regarding dietary patterns could then also be addressed in health promotion programmes.

Research methodology

Design

The study was a cross-sectional interview-administered household survey with an internationally validated questionnaire

viewed by a trained postgraduate research assistant after permission was sought from the local authorities and informed consent was obtained from the participants. A convenience sample of two geographically different communities in the central region of the Northern Province was chosen: one rural (Tiberius, 60 km west of Pietersburg) and one semi-urban community (Mankweng) representing different geographical and socioeconomic characteristics. Mankweng consists of six units and a population of 11212, Tiberius consists of 2 sections with a total population of 2000 using census data from 1996 (Statistics South Africa, 1998). From the six units in Mankweng one unit and from the two sections in Tiberius one section was chosen at random for the study. In the selected clusters of each area one adult was interviewed in all households. One adult was chosen at random by using the birth data method (the adult who had birthday nearest to the interview date, was selected for interview).

Table 1 : Biographical data

Variables	Study groups	
	Semi-urban	Rural
	n (or %)	n (or %)
Gender		
Male	43	52
Female	57	48
Age		
18 - 34 years	48	57
35 - 64 years	47	37
65 years and over	5	6
Pearson Chi-square = 2.05, df. = 2 p-value 0.358		
Education		
None	1	5
Primary (one to seven years)	11	62
Secondary (8 to 12 years)	57	25
Tertiary (one or more years)	31	8
Pearson Chi-square = 14.40, df. = 3 p-value 0.002 **		
Marital status		
Single/Separated/Divorced/Widow	50	49
Married	63	33
Pearson Chi-square = 4.572, df. = 3 p-value 0.032**		

among rural and semi-urban adults in the Northern Province in South Africa.

Sample and procedure

The sample consisted of 200 adults, 100 from an semi-urban area (Mankweng) and 100 from a rural area (Tiberius) in the Northern Province of South Africa. The adults were inter-

Research instrument

The Health and Behaviour Survey (developed by Steptoe & Wardle 1996: 49-73) was designed as a broad survey of health-related behaviours and beliefs, each individual area was tapped

by only a limited number of items. It was designed to measure European health and behaviour, and was later extended to include developing countries as well (e.g., Peltzer, 2000: 46). The following dietary behaviours were assessed: (a) frequency of consumption of red meat (daily, 2-3 times a week, once a week, less than once a week, never); b) frequency of consumption of fruit (daily, 2-3 times a week, once a week, less than once a week, never); c) addition of salt to food (usually, sometimes, occasionally, never); d) trying to avoid fat and cholesterol (yes, no); and e) trying to eat fiber (yes, no). The fiber and fat items were each followed by an open-ended question asking what foods the individual either avoided or ate. Ratings were also made of perceived body size (rated from very fat to very thin). Weight loss practices were recorded by using two items: „Are you trying to lose weight?“ and „Are you on a diet?“

The questionnaire was pilot tested on 30 adults and after 3 weeks re-administered. Test-retest reliability of .81 was found. Cronbach alpha and split-half reliability coefficient for the dietary questionnaire were .75 and .71, respectively, for this sample.

In relation to fruit consumption, the healthy practice was defined as eating fruit daily (WHO, 1990: 25f.). For adding salt to the food, the unhealthy practice was defined as responding *usually* to this question, whereas any of the other responses (*sometimes*, *occasionally*, or *never*) were categorized as healthy. For red meat consumption the healthy practice was

defined as eating meat less often than daily (including never). To produce a more quantifiable index and to simplify the presentation, a healthy diet index score was calculated including (1) avoid fat, (2) eat fiber, (3) eat fruit daily, (4) limit red meat, and (5) limit salt.

Data on age, marital status, height, and weight were also collected. Self-reported height and weight was used to calculate body mass index [weight (kg)/height (m)²].

Data analysis

Using the SPSS version 10.0 the Pearson's product-moment correlation coefficients were calculated to evaluate relationships between subscales. The Chi-square test was used for analysis of proportions.

Results

Table 1 indicates the sociodemographic characteristics of the participants.

There were 43 men in the semi-urban area and 52 men in the village, and there were 57 women in the semi-urban area and 48 in the village. The ages of the participants seemed to have been evenly distributed between semi-urban and rural as well as between the two age groups of 18-34 and 35-64 years. The majority of the villagers had (some) primary education (one

Table 2 : The body Mass Index (BMI) and perception of body weight of the study groups

BMI and perception of body weight		Study groups		X ²
		Semi-urban	Rural	
		n (or %)	n (or %)	
Less than 18 (Under weight)		7	2	3.238
18-25 (Normal weight)		44	47	
26-30 (Over weight)		30	34	
More than 30 (Obesity)		19	17	
Trying to lose weight		50	17	24.442***
Dieting to lose weight		37	17	10.147***
Consider yourself to be	Very overweight	10	4	16.454**
	Slightly over weight	37	21	
	About right	38	65	
	Slightly under weight	13	10	
	Very underweight	2	0	
Self perception about body weight				
Lost weight		26	21	
Gained weight		45	35	
Remained the same weight		29	44	

***p<.001, **p<.01, *p<.05

to seven years of schooling) whereas the majority of the semi-urban dwellers had (some) secondary education (8 to 12 years of schooling).

Table 2 indicates the Body Mass Index and body weight perception of the participants.

About a third (30% in semi-urban and 34% in rural) of the study sample have overweight and 18% had obesity. The majority of the semi-urban dwellers (45%) felt that they had gained weight and 44% of the villagers felt that their weight had remained the same. There were no significant differences between semi-urban ($X^2=1.76$; ns) and rural dwellers ($X^2=7.20$; ns) concerning body mass status. Half of the semi-urban sample was trying to lose weight and 37% was dieting

Semi-urban dwellers showed significantly higher healthy diet behaviour than rural dwellers in regard to avoiding fat, trying to eat fiber, limiting red meat, and limiting salt. Men reported more than women that they tried to eat fiber and they had more often breakfast everyday. There was a very low prevalence rate of eating fruits daily among both semi-urban (10%) and rural dwellers (9%).

The interrelationship between dietary practices is illustrated with the Pearson correlation matrix in Table 4. Significant associations were only found between eating fiber and avoiding fat, and limiting red meat and having breakfast almost everyday.

Table 5 indicates the dietary practice in relation to the BMI

Table 3: Healthy dietary practices by geography and gender

Healthy dietary behaviour	Semi-urban (%)	Rural (%)	X^2	Women (%)	Men (%)	X^2
Try to avoid fat and cholesterol	84	60	15.028***	70	73	.157
Try to eat fiber	94	59	33.665***	65	85	11.213***
Eat fruit daily	10	9	.001	12	8	.941
Limit red meat	90	77	5.830*	85	84	.073
Limit salt	94	84	5.107*	88	90	.061
Breakfast almost every day	57	70	3.263	55	70	4.697*

*** $p < .001$, ** $p < .01$, * $p < .05$

Table 4: Pearson correlations among dietary practices

Subscale	1	2	3	4	5
1. Avoid fat and cholesterol	--				
2. Eat fiber	.354***	--			
3. Eat fruit daily	-.062	.072	---		
4. Limit red meat	.001	-.090	-.001	---	
5. Limit salt	-.079	-.007	.063	-.010	---
6. Breakfast almost daily	-.030	-.054	-.118	.152*	.030

*** $p < .001$, ** $p < .01$, * $p < .05$

to lose weight; semi-urban dwellers were significantly more than villagers trying and dieting to lose weight, and also felt more overweight.

The prevalence of the individual healthy dietary practices for semi-urban and rural dwellers as well as men and women is shown in Table 3.

(Body Mass Index).

Generally, dieting and trying to lose weight seemed to proportionally decrease with a higher BMI. There were surprisingly no significant associations between body weight status and individual dietary healthy practices.

Dietary practices in relation to dieting status are shown in Table 6.

Pearson Chi-Square showed that dieters were more likely to be avoiding fat and limiting red meat.

ban and rural Blacks in the Northern Province of South Africa. However, there was a very low prevalence rate of eating fruits daily among both semi-urban (10%) and rural dwellers (9%), which is a cause for concern.

Generally semi-urban dwellers and men showed more healthy diet practices than rural dwellers and women did. The latter

Table 5: Percentages endorsing each dietary practice within BMI thirds

Dietary behaviour	BMI <25 (n=100)	BMI ≥25<30 (n=64)	BMI ≥30 (n=36)	χ^2
Trying to loose weight	20	17	17	9.986*
Dieting to loose weight	26	19	22	15.326**
Avoid fat	71	42	29	6.415
Eat fiber	82	46	24	5.805
Eat fruit	9	4	4	1.186
Limit red meat	73	44	30	5.267
Limit salt	89	58	31	1.702
Daily breakfast	60	54	45	3.876

BMI= Body Mass Index;***p<.001, **p<.01, *p<.05

Table 6: Percentages of dieters and nondieters endorsing each

Dietary practice	Dieting n=(54)	Not dieting (n=146)	χ^2
Avoid fat (%)	88.9	65.3	10.794***
Eat fiber (%)	85.2	73.1	3.184
Eat fruit (%)	8.0	10.1	.181
Limit red meat (%)	93.6	81.1	4.098*
Limit salt (%)	85.2	90.4	1.100

***p<.001, **p<.01, *p<.05

Dietary behaviour, body mass index and sociodemographic correlates

To produce a more quantifiable index, and to simplify the presentation, a healthy diet index score was calculated including (1) avoid fat, (2) eat fiber, (3) eat fruit daily, (4) limit red meat, (5) limit salt, and (6) having breakfast almost everyday. Findings are presented in Table 7.

Being semi-urban and male were significantly associated with the healthy dietary index, whereas age, BMI, educational level and marital status were not.

Discussion

The study found a moderately high prevalence of six simple healthy dietary practices among this population of semi-ur-

finding is contrary to some other studies where women were found to be practicing healthier dietary practices than men (Wardle et al.1997: 445f.).

Although more semi-urban dwellers (37%) were dieting than rural dwellers (17%) were, it only had a significant influence on two healthy dietary behaviours: avoiding fat and limiting red meat. This was also found among European young adults (Wardle et al. 1997: 448).

Furthermore, this study identified being semi-urban, female and having a lower education as associated with healthy dietary behaviour. Being semi-urban could be associated with higher socioeconomic status but not with lower educational level. Therefore, this result is mixed. Most other studies seem to indicate that higher socioeconomic status is associated with healthy dietary behaviour (Smith & Owen 1992: 735). For instance in Australia higher dietary fat intakes and lower dietary fiber intakes have been found among lower socioeco-

conomic groups compared to higher status groups (Smith & Baghurst 1992: 409). Steptoe and Wardle (1999: 391) found among a representative sample in Britain that fibre consumption was inversely associated with socioeconomic status and that the higher education group ate more fiber, fruit, vegetables and cereals than the low education group.

The rate of overweight and obesity status in this sample (32% and 18% respectively) is slightly lower to what was found by Walker (1995: 95f.) (44% obesity among female Blacks and

Table 7: Pearson Chi-square between healthy dietary index and socio-demographic variables

Variable	Healthy dietary index
Age	12.70
Semi-urban (vs rural)	23.30***
Female sex (vs male)	12.93*
BMI	5.23
Formal education	10.35
Single/divorced (vs married)	10.83

***p<.001, **p<.01, *p<.05

8% among Black males) and by the Medical Research Council (1998: 21f.) in a nationally representative survey among South Africans (approximately 28% overweight or obesity among men and 55% among women).

In conclusion, results give insights into dietary health behaviour practices and the factors that influence them, which have practical implications for dietary health promotion.

It is recommended that dietary messages for the studied population should address: (1) the very low prevalence rate of eating fruits daily among both semi-urban and rural dwellers, (2) the low prevalence of healthy dietary practices (especially in regard to avoiding fat, trying to eat fiber, limiting red meat, and limiting salt) among rural dwellers, (3) to increase the awareness of overweight and the practice of trying and dieting to lose weight, especially among the villagers, and (4) to particularly encourage the healthy dietary practice of trying to eat fiber and eating breakfast everyday among women.

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References

DE HAAN, M 1993: The health of Southern Africa (6th edition). Kenwyn: Juta & Co.

EDELMAN, CL & MANDLE, CL 1998: Health promotion throughout the lifespan. St. Louis: Mosby.

FURIE, J & STEYN, K Eds. 1995: Chronic diseases of life style in South Africa. Cape Town: MRC Technical Reports.

MEDICAL RESEARCH COUNCIL (SOTUH AFRICA) 1998: South Africa demographic and health survey. Pretoria: Department of Health.

PELTZER, K 2000: Health behaviour in Black South African university students. *South African Journal of Psychology*. 30(4): 46-49.

SMITH, AM & BAGHURST, KI 1992: Public health implications of dietary differences between social status and occupational category groups. *Journal of Epidemiology and Community Health*. 46: 409-416.

SMITH, AM & OWEN, N 1992: Associations of social status and health-related beliefs with dietary fat and fiber densities. *Preventive Medicine*. 21: 735-745.

STATISTICS SOUTH AFRICA 1998: The people of South Africa: population census, 1996. Pretoria: Author.

STEPTOE, A & WARDLE, J 1992: Cognitive predictors of health behaviour in contrasting regions of Europe. *British Journal of Clinical Psychology*. 31: 485-502.

STEPTOE, A & WARDLE, J 1996: The European health and behaviour survey: the development of an international study in health psychology. *Psychology and Health*. 11: 49-73.

STEPTOE, A & WARDLE, J 1999: Motivational factors as mediators of socioeconomic variations in dietary intake patterns. *Psychology and Health*. 14: 391-402.

STEYN, K; LANGENHOVEN, ML; JOUBERT, G; CHALTON, DO; BENADÉ, AJS & ROSSOUW, JE 1990: The relationship between dietary factors and serum cholesterol values in the coloured population of the Cape Peninsula. *South African Medical Journal*. 78: 63-67.

WALKER, ARP 1995: Epidemiology and health implications of obesity in Southern Africa (In: Furie, J & Steyn, K Eds. 1995: Chronic diseases of life style in South Africa. Cape Town: MRC Technical Reports, pp 73-86).

WARDLE, J; STEP TOE, A; BELLISLE, F; DAVOU, B; RESCHKE, K & LAPPALAINEN, R 1997: Healthy dietary practices among European

students. Health Psychology. 16: 443-450.

WORLD HEALTH ORGANISATION 1990: Diet, nutrition, and the prevention of chronic diseases. Geneva: WHO.

