

# Nutrition related knowledge and practices of hypertensive adults attending hypertensive clinics at day hospitals in the Cape Metropole

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## Abstract

The aim of this study was to determine nutrition knowledge and dietary practices of hypertensive adults attending hypertensive clinics at Day Hospitals in the Cape Metropole. Ten Day Hospitals were randomly selected from a total of 31 Day Hospitals and the first participants attending the hypertension clinics per day were recruited. A total of 85 participants were evaluated. The weight, height, waist and hip circumference of each participant was measured, as well as their blood pressure. Knowledge of dietary intake was obtained by completing a questionnaire, during an interview with the patient. Knowledge regarding salt usage indicated that a large percentage (34.1%) of participants believed that flavour enhancers like Aromat or Fondor could safely be used instead of table salt. Furthermore, 23.5% reported that tinned and smoked meat or fish have a low sodium (salt) content. Fruit and vegetables were perceived as having a positive effect on hypertension by 74.1% of participants. However, only 15% of the group knew that the recommendation for their usage was five or more servings per day. Only 12.9% of participants in this study had a normal weight (body mass index (BMI) < 25), 25.9% were overweight (BMI 25 - 29.9) and 61.2% were obese (BMI ≥ 30); 84.7% recognized the association between obesity and hypertension. A large waist circumference (> 88 cm in women; 102 cm in men) was found in 61.2% of participants, however, only 18.2% of black men had such a measurement. Uncontrolled blood pressure readings (> 140/90 mm Hg) were found in 61.2% of these patients at the hypertension clinics.

## Opsomming

Die doel van hierdie studie was om dieetkennis en praktye van volwassenes met hipertensie wat hipertensieklinieke by die Daghospitale in Kaapstad bywoon, te bepaal. Tien uit 31 Daghospitale in Kaapstad is ewekansig geselekteer, en die eerste pasiënte wat die klinieke bygewoon het op die dag van besoek is gewerf. 'n Totaal van 85 pasiënte is geëvalueer. Die gewig, lengte, middel- en heupomtrek van elke deelnemer is gemeet, asook hulle bloeddruk. Kennis omtrent dieetname is verkry deur middel van 'n vraelys wat gedurende 'n onderhoud met die pasiënt voltooi is. Kennis in verband met soutverbruik het getoon dat 'n hoë persentasie (34.1%) deelnemers geglo het dat Aromat of Fondor veilig gebruik kan word in plaas van tafelsout. Verder het 23.5% gerapporteer dat ingemaakte en geroekte vleis of vis 'n lae natrium (sout) inhoud bevat. Vrugte en groente is deur 74.1% beskou as voedsel wat 'n positiewe effek op bloeddruk het, alhoewel slegs 15% van die groep het geweet dat vyf of meer porsies per dag benodig word. Slegs 12.9% van die deelnemers het 'n normale gewig gehad (liggaamsmassa indeks (LMI) < 25), terwyl 25.9% oorgewig (LMI 25 - 29.9), en 61.2% vetsugtig was (LMI ≥ 30); 84.7% was bewus van die verhouding tussen vetsug en bloeddruk. 'n Groot middelomtrek (> 88 cm in vroue; 102 cm in mans) is by 61.2% pasiënte aangetref, alhoewel slegs 18.2% swart mans so 'n omtrek gehad het. Onkontroleerde bloeddruk (> 140/90 mm Hg) is in 61.2% pasiënte aangetref.

# Introduction

Hypertension is the most commonly reported chronic illness among all South Africans and results in end-organ damage such as heart failure, stroke and renal disease (Opie, 1995:37). People with hypertension have 2 to 3 times the risk of coronary heart disease and 7 times the risk of stroke (Castelli, 1983:1191). Among South Africans 15 years and older, the prevalence of hypertension is highest in white males (38%) followed by Asian men (29.9%) and lowest in black rural adults; 18.6 and 21.2% for men and women respectively (Department of Health, 2002:212).

Hypertension poses a health and economic burden on South Africans by virtue of its morbidity, costly complications, and predisposition to premature mortality (Daniels, Biesma, Otten Levitt, Steyn, Martell & Dick, 2000:1210). Future increases can be anticipated among black South Africans, particularly in older black women where obesity is a predisposing risk factor. Hypertension among blacks is not caused by any inherent ethnic differences since previously the incidence of hypertension was low among rural blacks. However the process of urbanization appears to have increased the risk of hypertension considerably (Opie, 1995:44).

Factors that are implicated in the development and poor management of hypertension are numerous and include: weight gain; high dietary salt intake; low rennin status and salt sensitivity; tobacco use; insulin resistance; high alcohol intake and increased psychosocial stress levels (Opie, 1995:46).

One of the concerns with regard to patients with hypertension is the finding that many patients do not manage and control their blood pressure optimally. This requires both adherence to a healthy lifestyle and the regular use of prescribed blood pressure medication. There are many reasons for a lack of blood pressure control, with some of these being attributed to social and economic factors (Hale, Fritz & Eales, 1998:453). Patients frequently do not return to the health-care centers for follow-up visits as a result of the costs incurred by transport and the time involved. A further consideration may be a lack of knowledge of the disease and its outcomes, in particular the risk of stroke. Daniels *et al.*, (2000:1206) attributed poor service delivery as also being a major factor, which contributes to poor control of blood pressure in patients at primary health-care level.

It is known that quality of health care is dependent upon the knowledge, attitudes and practices of both physicians and health-care workers. One of the critical roles of primary health care in the management of blood pressure and prevention of stroke is education of the patient. Health-care professionals at all levels should be involved and should continually reinforce the message that stroke can largely be prevented by the control of blood pressure and by maintaining a satisfactory body weight and following a healthy lifestyle (Daniels *et al.*, 2000:1206). A healthy lifestyle includes having a diet, which is low in sodium, high in fruit and vegetables and low in fat. The extent of patients' knowledge and practices with regard to a healthy diet for hypertension is unknown and a recent survey of the elderly in West Coast fishing villages (Charlton, Schloss, Visser, Lam-

bert, Kolbe & Levitt., 2001:149), found that 24-hour urinary sodium excretion corresponded to a dietary intake of about 9g of salt per day, which exceeds the recommended value of 6g or less per day of the US National High Blood Pressure Education Program (1997:2446). In the present study we attempted to identify the dietary knowledge and practices of patients relating to their hypertension and to their weight status.

## Methods

### Study design

A cross-sectional descriptive study design was used in order to obtain health-related information from hypertensive patients in the Cape Metropole area.

### Sample

This study was undertaken as a pilot study in order to select the best dietary questions to be used in a future collaborative urban study with Johns Hopkins University to investigate barriers to hypertension in black, "coloured" and white patients in Cape Town Metropole Day Hospitals in 2003. Ten Day Hospitals were randomly drawn from a total of 31 Day Hospitals in the Cape metropolitan area. The Day Hospitals were first stratified into hospitals which predominately service black, "coloured" and white patients respectively. Five hospitals were then randomly selected from each group. The Day Hospitals serve patients with no private medical aid, thus the participants come mainly from low and middle socio-economic classes.

The sample included four Day Hospitals (Brown's Farm, Cross Roads, Vanguard and Michael Mapongwana) which serviced mainly black patients and 6 Day Hospitals (Belhar, Reeds, Kensington, Strand and Hanover Park) which serviced mainly "coloured" and white patients. At each hospital in the sample the first patients attending the "hypertension clinic" at that hospital during the third week in January, were invited to participate in the study. There was a 100% response rate, and a sample of 85 patients with age ranging from 35 to 65 years participated in the study. The mean age of black female patients was 50.9 (5.9) years and that of black males 56.7 (8.8) years. The mean age of white and "coloured" females was 54.2 (8.2) years and that of males 56.5 (7.4) years.

### Data collection

A team of fieldworkers comprising three nurses and six fieldworkers undertook the fieldwork which comprised interviews, anthropometric and blood pressure measurements of the participants. The assessments were undertaken in co-operation with the nursing sister in charge of each hypertensive clinic.

The questionnaire was developed in consultation with 3 dietary experts (experienced dietitians), 2 nursing sisters and a specialist (M.B.Ch.B) in chronic diseases of lifestyle. These experts were required to identify essential knowledge concepts and questions, in order to provide construct, face and content validity to the questionnaire (Talmage & Rasher, 1981:84). Dietary questions were se-

**Table 1 – Dietary practices and knowledge with regard to salt usage by hypertensive patients attending Hypertensive Clinics at Day Hospitals in the Cape Metropolitan area**

	Black (N=28)		Coloured & White (N=57)		All the groups (N=85)	
	Frequency	%	Frequency	%	Frequency	%
Perceived weight						
- overweight	6	22.2	40	69.0	46	54.1
- under weight	3	11.1	3	5.2	6	7.1
- normal weight	18	66.7	15	25.9	33	38.8
<i>Practices:</i>						
Eat food						
- very salty	1	3.57	7	12.28	8	9.4
- lightly salted	26	92.86	44	77.19	70	82.4
- unsalted	1	3.57	5	8.77	6	7.1
Never add extra salt to food	18	64.29	38	66.67	56	65.9
First taste food and then add salt	8	28.57	16	28.07	24	28.2
Always add salt to food without tasting	2	7.14	3	5.26	5	5.9
<i>Knowledge:</i>						
Knowledge of relationship between overweight and blood pressure:						
- yes	24	88.9	48	82.8	72	84.7
- no	1	3.7	1	1.7	2	2.4
-do not know	2	7.4	9	15.5	11	12.9
Amount of salt allowed for a hypertensive patients :						
- none	9	32.14	9	15.79	18	21.1
- ½ teaspoon	12	42.86	28	49.12	40	47.1
- 1 teaspoon	2	7.14	4	7.02	6	7.1
- unlimited	1	3.57	1	1.75	2	2.4
- do not know	4	14.29	15	26.32	19	22.4
People should eat 5 or more portions of fruit and vegetables per day -yes	2	7.14	7	22.81	13	15

lected based on the following *knowledge* concepts which had been selected by the researchers as important aspects for patients to know: foods high and low in salt, foods high in fat; foods high in potassium; relationship of salt and blood pressure; relationship of obesity and hypertension. Additionally *practices* with regard to salt usage were also questioned, such as the addition of salt to food.

The questionnaire was piloted on 10 hypertensive adults attending a hypertensive clinic excluded from the sample hospitals. The participants included ones with various levels of education, ranging from primary school to graduates. The questionnaire was adapted after the testing phase in order to rectify dietary questions, which were nor clear or were found to be inappropriate.

## Measurements

The weight, height, waist and hip circumference of each participant was measured, as well as his or her blood pres-

sure. Anthropometric measurements and testing procedures used have been described by Monyeki, Toriola, de Ridder, Kemper, Steyn, Nthangeni, Twisk, and van Lenthe (2002:39). The absolute and relative values for intra-tester and inter-tester technical error of measurements (TEM%) were calculated and comprised less than 2 % of error. Procedural and quality control indicated a general adequate reproducibility across the broad range of measurements.

Height was measured with a stadiometer to the nearest centimetre and weight was measured with an electronic digital scale to the nearest kilogram. Hip and waist circumferences were measured using a flexible steel tape to the nearest centimeter, according to procedures of the International Society for the Advancement of Kinanthropometry (ISAK) (Norton & Olds, 1996:398). Blood pressure and heart rate were measured with an Omron M4-I. Three measurements were taken with a two to five minute interval between measurements. The first measurement was then discarded and an average of the second two measurements was taken.

**Table 2 – Patients' knowledge of foods perceived to be healthy for hypertensive and overweight patients attending Clinics at Day Hospitals in the Cape Metropolitan area**

	Black (N=28)		Coloured & White (N=57)		All the groups (N=85)	
	Frequency	%	Frequency	%	Frequency	%
Fried egg	3	10.71	6	10.53	9	10.6
Fruit & Vegetables	25	89.29	56	98.25	81	95.3
Pastries	1	3.57	3	5.26	4	4.7
Chocolate	3	10.71	3	5.26	6	7.1
Tinned/smoked meat	5	17.86	16	28.07	21	24.7
Samp & beans	17	60.71	41	71.93	58	68.2
Mabella porridge	19	67.86	42	73.68	61	71.8
Stock cubes	5	17.86	15	26.32	20	23.5
Cheese & cheese spreads	14	50	26	45.61	40	47.1
Potato chips	3	10.71	8	14.04	11	12.9
Liver	13	46.43	26	45.61	39	45.9
Brown bread	28	100	56	98.25	84	98.8
Tinned or packet soup	8	28.57	28	49.12	36	42.4
Bovril	7	25	20	35.09	27	31.8
Isidudu (soft maize)	19	67.86	43	75.44	62	72.9
Vetkoek	3	10.71	11	19.3	14	16.5
Fondor/Aromat	3	10.71	14	24.56	17	20.0
Samoosa	1	3.57	0	0	1	1.2

## Statistical analyses

Data was entered into spreadsheets in Excel (2000) and analyzed using the SPSS (2001) programme. Data was expressed in contingency tables designed to compare results between the groups. For the purpose of this study black patients have been placed in a category of their own. This is mainly because their dietary habits differ from those of the other two groups.

## Ethical issues

The Ethics Committee of the University of Stellenbosch approved the research proposal. Informed written consent was obtained from all the participants

## Results

### Dietary Practices

Ninety-two percent of black participants and 77% of coloured and whites reported eating their food lightly salted (Table 1). More than 60% indicated that they do not add additional salt at the table and less than 10% reported adding salt to food without tasting it first.

### Dietary knowledge

Knowledge regarding salt usage and its relationship to hypertension was better than we anticipated, except that less than 50% knew the amount of salt recommended for patients with hypertension. Foods perceived to be healthy by black patients (Table 2) in order of frequency, were: brown bread, fruit and vegetables, followed by mabella, soft maize porridge and samp and beans. For "coloured" and white patients fruit, vegetables and brown bread were most commonly cited, followed by soft maize porridge, maltabella, samp and beans. Very few patients regarded pastries, samosas and chocolates as healthy choices. However 24.7% thought tinned, smoked meat (24.7%), chips (12.9%) and Aromat/Fondor (20%) were healthy options.

In Table 3 salt knowledge is tested in another format. It is promising to note that fruit and vegetables are perceived as having a positive impact on hypertension by 74.1% and use of herbs being used to flavor foods instead of salt by 69.4%. Not so promising is the large percentage participants (34.1%) believing that Aromat/Fondor can be used instead of salt and that tinned cured meat and fish have a low salt content (23.5%).

**Table 3 – Patients attending Hypertensive Clinics at Day Hospitals who regard the following statements as being true**

	Black (N=28)		Coloured & White (N=57)		All the groups (N=85)	
	Frequency	%	Frequency	%	Frequency	%
Fresh fish is high in salt**	7	25	6	10.53	13	15.3
People with HBP can use Aromat/Fondor in stead of salt**	3	10.71	26	45.61	29	34.1
S tock cubes do not contain salt**	6	21.43	6	10.53	12	14.1
Vegetables & fruit can reduce your BP*	25	89.29	38	66.67	63	74.1
Tinned, cured and smoked meat and fish have a low salt content**	7	25	13	22.81	20	23.5
Herbs can be used to flavor foods instead of salt*	13	46.43	46	80.7	59	69.4

\* This statement is actually true.

\*\* This statement is actually false.

### Education on diet

The most interesting finding in Table 4 is that 71.4% of black participants had received dietary information at the Hypertension Clinic compared with only 35.1% of white and "coloured" patients. There is a large difference between the two groups with regard to the source of dietary information: 53.6% of black patients had received dietary information from a nurse and none from a dietitian, while 3.5% and 12.3% of other patients had received dietary information from a nurse and dietitian respectively.

### Anthropometry

Only 12.9% of participants in this study had a normal BMI (<25), 25.9% were overweight and 61.2% were obese (Table 5). It was noted that 84.7% of the sample recognized the association between obesity and hypertension (Table 1). High waist measurements were found in 61.2% of the participants, but to a far lesser extent in black men (18.2%). A high diastolic measurement was found in 45.8% of patients and a high systolic measurement in 57.6%. Sixty-one percent of participants had a blood pressure above 140/90mmHg.

## Discussion

One of the main objectives of this study was to develop and test dietary questions relating to treatment of hypertensive patients. This has led to a further refining of the questionnaire which will now be used in a representative urban sample investigating barriers to treatment and management of hypertensive patients in Cape Town (started in

August 2003).

The national Demographic and Health Survey (Department of Health, 2002:215) found that in the Western Cape 5.1% of males and 3.1% of females add salt before tasting their food and 15.5% of males and 10.5% of females reported that they eat their food very salty (Department of Health, 2002:217). Similar results were found in the participants of this study with 5.9% reporting that they always add salt to food before tasting it and 9.4% reported eating very salty food.

Knowledge of diet and hypertension was found to be rather poor, particularly with regard to quantification of salt intake as well as the number of fruits and vegetables to be consumed daily. An intake of at least five portions (400 g) of fruit and vegetables per day is recommended as a healthy guideline for adults in terms of their contribution to potassium intake (Love & Sayed, 2001:24). In the present study only 15% of participants knew that fruit and vegetable consumption should be at least five or more servings per day. In Cape Town it has been reported that 29% of black adults (aged 15 – 64 years) reported eating no vegetables or fruits in the previous 24-hour period (Bourne *et al.*, 1994:147). This finding is most probably the result of poor socioeconomic status in a large proportion of blacks residing in Cape Town, which may impact negatively on their purchasing ability.

Knowledge regarding types of food considered to be healthy was generally good with brown bread and fruit and vegetables featuring very prominently as healthy food items. Furthermore, patients generally knew about the association between diet and obesity and about salt and hypertension. However, the high prevalence of obesity and uncon-

**Table 4 – Percentage of hypertensive patients who received dietary advice from a health professional at the Hypertensive Clinics at Day Hospitals in the Cape Metropolitan area**

	Black (N=28)		Coloured & White (N=57)		All the groups (N=85)	
	Frequency	%	Frequency	%	Frequency	%
Been informed about						
– reduced salt diet	19	67.96	36	63.16	55	64.7
– reduced fat diet	23	82.14	34	59.65	57	67.7
Received information from the Hypertensive Clinic about diet		71.43	20	35.09	40	47.1
Who gave most dietary information at the Clinic						
-- doctor	20	10.71	9	15.79	12	14.1
– nurse	15	53.57	2	3.51	17	20.0
– dietician	0	0	7	12.28	7	8.2
– other	2	7.14	2	3.51	4	4.7

trolled blood pressure leads one to believe that many patients do not have a healthy diet. It is however acknowledged that other lifestyle risk factors, such as tobacco, inactivity and stress also have contributed to this situation (Steyn, Gaziano, Bradshaw, Laubscher & Fourie 2001:1723). There is some evidence to suggest that hypertension in black South Africans, as in their African-American counterparts, is often salt sensitive (Touyz, Milne & Reinach 1993:693; Worthington, Wendt & Opie, 1993:296; Opie, 1995:38). Further, potassium intake has been shown to be low in both hypertensive and normotensive black subjects (Charlton, Steyn, Zulu, Jonathan, Levitt, Nel & Veldman, 2002:12).

From the findings in this pilot study it appears that the majority of black patients received dietary advice from the clinic, while this was not the case for the rest of the participants, since only 35% reported receiving advice there. Furthermore, most black participants perceived nurses to be the main dietary advisers while “coloured” and white patients reported that doctors were. All in all however, more than 60% of patients had been informed about a reduced salt and/or low salt diet. Since we did not ask the health professionals at the clinics visited about the type of dietary advice, which they provide, it is difficult to assess the quality of the advice given. However, this appears to be an important focus area for future research on hypertensive patients and we recommend that this aspect be investigated.

Black patients are mainly receiving dietary advice from nurses at the clinics hence intervention tools for health promotion need to be developed to assist the clinic staff in empowering patients to consume a diet which is low in sodium and high in potassium. It is recommended that the health services develop and test culturally appropriate dietary educational tools.

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**Table 5 – Blood pressure and anthropometric measurements of patients attending Hypertensive Clinics at Day Hospitals in the Cape Metropolitan area**

	Black (N=28)		Coloured & White (N=57)		All the groups
	Males N = 11 n (%)	Females N = 16 n (%)	Males N = 13 n (%)	Females N = 16 n (%)	N = 85 n (%)
Been informed about	2 (18.2)	9 (56.3)	4 (30.8)	21 (46.7)	36 (42.4)
Normal	9 (81.2)	7 (43.8)	9 (69.2)	24 (53.3)	49 (57.2)
Above cut-off (>140mmHg)					
Hypertension Diastole:	4 (36.4)	7 (43.8)	9 (69.2)	26 (57.8)	46 (54.1)
Normal	7 (63.6)	9 (56.3)	4 (30.8)	19 (42.2)	39 (45.8)
Above cut-off (>90mmHg)	4 (36.4)	10 (62.5)	9 (69.2)	29 (64.4)	52 (61.2)
Hypertension (>140/90mmHg)	9 (81.8)	5 (31.3)	6 (46.2)	13 (28.9)	33 (38.8)
Waist circumference:	2 (18.2)	11 (68.8)	7 (53.8)	32 (71.1)	52 (61.2)
Normal					
Above cut-off*					
Waist to hip ratio:	11 (100.0)	14 (87.5)	4 (30.8)	22 (48.9)	51 (60)
Normal	0 (0.0)	2 (12.5)	9 (69.2)	23 (51.1)	34 (40)
Above cut-off**					
Obesity:					11 (12.9)
Normal BMI	3 (27.3)	1 (6.3)	1 (7.7)	6 (13.3)	22 (25.9)
BMI between 25-29.9	3 (27.3)	4 (25.0)	5 (38.5)	10 (22.2)	52 (61.2)
BMI above 30	5 (45.5)	11 (68.8)	7 (53.8)	29 (64.4)	74 (87.1)
Total overweight (BMI <sub>≥</sub> 25)					

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