

Full Length Research Paper

Hypertension-related knowledge, attitudes and life-style practices among hypertensive patients in a sub-urban Nigerian community

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Hypertension (htn) is an important public health challenge at Auchi Nigeria. The purpose of this qualitative phenomenological survey was to determine hypertensive patients' knowledge, perceptions, attitudes and life-style practices so as to optimize their health and treatment needs. We examined a cohort of 108 randomly selected hypertensive by means of a self-structured questionnaire and a detailed interview. Analysis was by statistical package for social sciences (SPSS) and chi-square of the GraphPad Prism software was used for significance tests at 0.05 level. More males 60 (55.6%) than females 48 (44.4%) were assessed. Their age range was 35 – 80 years (mean = 59.05 ± 9.06 years), the modal age group was 56 – 60 years (24.1%). Sixty-six respondents (61%) knew htn to be high blood pressure (BP), 22 (20%) thought it meant excessive thinking and worrying while 57 (53%) claimed it was hereditary. Forty-three (40%) felt it was caused by malevolent spirits, 32 (30%) believed it was caused by bad food or poisoning. A few (18%) knew some risk factors. Symptoms attributed to htn were headache, restlessness, palpitation, excessive pulsation of the superficial temporal artery and "internal heat", but 80 (74%) attested to its correct diagnosis by BP measurement. Although 98 (90.7%) felt the disease indicated serious morbidity, only 36 (33.3%) were adherent with treatment and fewer practiced life-style modification. Thirty-two (30%) knew at least one antihypertensive drug they use. Psychosocial factors like depression and anxiety, fear of addiction and intolerable drug adverse effects impacted negatively on patients' attitude to treatment. We conclude that patients' knowledge of htn in Auchi is low and their attitudes to treatment negative. Patient education, motivation and public enlightenment are imperative.

Key words: Hypertension-related knowledge, perception, attitudes, life-style practices, hypertensive Nigerian patients.

INTRODUCTION

Health-seeking behaviour is a part and parcel of a person's, family's or community identity being the result of an evolving mix of personal, experiential and sociocultural factors. It varies for the same individuals or communities when faced with different diseases such as tuberculosis, HIV/AIDS and htn (Tipping and Segall, 1995; Ahmed et al., 2000; Outwater et al., 2001). The

desired health-seeking behaviour is for an individual to respond to an illness episode by seeking first and foremost help from a trained allopathic doctor in a formally recognized healthcare centre (Conner and Sparks, 1996). Recent surveys reveal continuing deficiencies in the awareness, treatment and control of htn. In many cases, failure to achieve BP goals may be attributable to the poverty of patients' knowledge, perception, attitudes and life-style practices (Hennis et al., 2002; Mari et al., 2006; Iyalomhe, 2007; Ong et al., 2007; Petrella et al., 2007). Hence assessing the knowledge, perception, attitudes and life-style practices of hypertensive patients is vitally

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important in achieving htn control goals at the population level and also for meeting quality standards in healthcare delivery (Conner and Sparks, 1996). Htn remains a major global public health challenge that has been identified as the leading risk factor for cardiovascular morbidity and mortality as well as all-cause mortality (WHO, 2002; Joint National Committee (JNC) 7, 2003; Kearney et al., 2004). Being the pivotal determinant of cardiovascular complications such as coronary heart disease, myocardial infarction, stroke or renal insufficiency, htn affects approximately 1 billion people worldwide (4.5% of the current global disease burden), 340million of these in economically developed and 340 million in economically developing countries. Annually, it causes 7.1 million (one-third) of global preventable premature deaths (Kearney et al., 2004; Bhatt et al., 2006; Gunarathne et al., 2008).

The prevalence of htn varies within different countries. The overall global prevalence among adults was recently estimated to be 26.6% in men and 26.1% in women (Kearney et al., 2004). Being the most rapidly rising cardiovascular disease in sub-Saharan Africa and affecting over 20 million people, htn prevalence has been reported to be on the increase in recent years (Kaufman and Barkey, 1993; Copper et al., 1997; Cooper et al., 1998; Kadiri, 2005). In Nigeria, nay at Auchi, htn is the commonest non-communicable disease with over 4.3 million Nigerians above the age of 15 years classified as being hypertensive (systolic BP \geq 160 mmHg and diastolic BP \geq 90 mmHg) using the erstwhile national guidelines (National Expert Committee, 1997; Kadiri et al., 1999; Akinkugbe, 2003; Iyalomhe et al., 2008 Ike, 2009). This gives a prevalence rate of about 25% which is even higher when the current standard treatment guidelines (STG) of \geq 140 and \geq 90 mmHg systolic and diastolic BPs respectively, are used as a landmark (JNC 7, 2003 Standard Treatment Guidelines, 2008). Prevalent rates of this magnitude place a significant burden on the limited health facilities of developing countries.

Htn in Blacks has long been recognized as occurring earlier in life, more severe and having closer links to pressure-related target organ injury such as left ventricular hypertrophy, chronic kidney disease and heart failure than in Caucasians (Flack et al., 2003; JNC 7, 2003; Johnson and Wright, 2005). The simplest and most effective public health strategies for controlling htn and its target organ damage include preventive measures and antihypertensive therapy which have been associated with reductions in stroke incidence averaging 31 – 45%, myocardial infarction 20 – 25% and heart failure more than 50% (Law et al., 2003; Mulrow et al., 2004; Petrella et al., 2007; Ong et al., 2007). However, in most communities, only about 50% of those who are hypertensive are aware of their condition and less than 50% of those who are aware are receiving adequate treatment, a situation that has been called “the rule of halves” (Marques-Vidal and Tuomilehto, 1997). In Nigeria, awareness is poor as only 33.8% of hypertensive are aware of their condition (Familoni, 2002; Akinkugbe, 2003; Kadiri, 2005). Of these patients in

Auchi, very little is known about their knowledge, perception and attitude to treatment of htn. Therefore, as part of a quality assessment to improve the management outcome of hypertensive patients, we evaluated by means of a descriptive, cross-sectional qualitative phenomenological survey, hypertensive patients' knowledge, perception, attitudes and life-style practices in Auchi, Nigeria. This is with a view to meeting their health and treatment needs more accurately, meaningfully and pragmatically.

MATERIALS AND METHODS

Study settings

Auchi is a sub-urban cosmopolitan community located in Etsako West Local Government Area of Edo State in the Niger Delta region of the South-South Zone of Nigeria. It has a population of about 20 000 people. Apart from a few artisans, traders, government workers and teachers (civil servants), the people are predominantly farmers. Unlike any other community in Edo State of Nigeria, Auchi has adequate representation of muslims, christians and African traditional religionists. Hence we hope the knowledge, perception, attitudes and life-style practices of the community will be representative of the area.

Inclusion and exclusion criteria

Those who were eligible for inclusion into this descriptive cross-sectional, qualitative phenomenological survey were a cohort of 108 adult male and female hypertensive patients drawn from 6 randomly selected health facilities in Auchi (Central Hospital, Osigbemhe Hospital, Sametu Medical Centre, Comprehensive Health Centre, New Era Clinic, Faith Medical Centre) out of the 10 existing ones between January and June, 2009. Participants, whose htn history was more than one year, were selected. Children and hypertensives with senile dementia were excluded.

Diagnosis of htn

Htn was diagnosed by measurement of systolic and diastolic BP with a standard mercury sphygmomanometer on both arms at the same period of the day on at least two occasions using standardized methods (JNC 7, 2003).

Sample size

The sample size (120) was estimated based on figures from two previous similar studies (Adedoyin et al., 2006; Babaei et al., 2008) using a computer programme “n-Query” on the basis of alpha 0.05, power 95% confidence limit.

Sampling method

In the various health facilities used, eligible respondents were randomly selected.

Questionnaire

Data capture instrument was a self-structured close-ended

Table 1. Age and sex distribution of hypertensive patients (N=108, 100%).

Age range (yr)	Sex		Total (%)
	Males (%)	Females (%)	
35 - 40	4 (3.8)	1 (0.9)	5 (4.7)
41 - 45	3 (2.8)	2 (1.9)	5 (4.7)
46 - 50	6 (5.6)	2 (1.9)	8 (7.5)
51 - 55	12 (11.1)	9 (8.3)	21 (19.4)*
56 - 60	15 (13.9)	11(10.2)	26(24.1)*
61 - 65	9 (8.3)	6 (5.6)	15 (13.9)
66 - 70	6 (5.7)	8 (7.4)	14 (13.1)
71 - 75	3 (2.8)	6 (5.6)	9 (8.4)
76 - 80	2 (1.9)	3 (2.8)	5 (4.7)
Total	60 (55.6)	48 (44.4)	108 (100)

*Higher % in the age ranges.

questionnaire which was pretested on hypertensive patients attending Osigbemhe Hospital Auchi to ascertain its construct validity and psychometric reliability. The data were collected through in-depth interviews by trained personnel comprising doctors and nurses. The questionnaire sought information on participants' age, sex, educational background, religion, marital status, family size and dependant relatives and current working status. Also of relevance to the study were information on items to assess knowledge, perception, attitudes to treatment and life-style practices (as previously used by Familoni, 2002; Olivera et al., 2005; Babaei et al., 2008), such as history of htn, patient's clinical experiences of the disease (e.g. symptoms and signs, treatment process e.g. self report on medication adherence, experience of side effects etc, diet, life style adjustment), perceptions (e.g. beliefs, feelings), psychological experiences (e.g. depression, fears), attitude concerning htn and social experiences (e.g. interpersonal relationships, self-concerns).

Ethics

Ethical clearance was obtained from the local Ethics Committees at the Ambrose Alli University College of Medicine Ekpoma, Nigeria and the Central Hospital Auchi, Nigeria. All patients gave their written informed consent to participate in the survey.

Data management

The statistical package for social sciences (SPSS) software was used for data analysis to generate rates, percentages and proportions. Confidence interval was at 95%. Significance tests were done with the chi-square tests of the GraphPad Prism software. Significance was set as 0.05.

RESULTS

Of the 120 patients sampled for the survey, 12 did not complete their interviews, leaving for analysis 108 subjects who constituted our study population of 47 (44%) farmers, 30 (28%) government workers and teachers, 23 (21%) traders and 8 (7%) artisans. Majority

96 (89%) of the respondents were married, 9 (8%) were widows and 3 (2.8%) were widowers. Thirty-two (30%) had secondary or post-secondary education while the rest were primary school certificate holders or illiterates.

Table 1 shows there were more males 60 (55.6%) than females 48 (44.4%) and they were aged between 35 and 80 years (mean = 59.05 ± 9.06), with a modal age group of 56 - 60 years (24.1%). The youngest male and female hypertensives were 35 and 50 years respectively while the oldest male and female were 77 and 80 years, respectively. The mean ages of hypertensive males (57.08 ± 9.51) and females (61.02 ± 9.41) were significantly different, $p < 0.05$. Up to the age of 50 years, males 13 (21.7%) were significantly more affected than females 5 (10.5%), $p < 0.05$; whereas after 50 years, females tend to be comparatively more afflicted with the disease.

Table 2 shows that 66 respondents (61%) knew htn to be high BP but 42 (38.9%) did not know it to be so ($X^2_{cal} = 8.67$; $p=0.020$). While 22 (20%) thought it was a term used for excessive thinking and worries, 86 (79.6%) believed it was not ($X^2_{cal}=38.0$; $p=0.000$). Although 57 (53%) claimed htn was hereditary because they observed it in some of their relatives or some other families, 51 (47%) claimed it was not ($X^2_{cal}=34$; $p=0.563$). Whereas 23 patients claimed that htn was caused by witches and wizards (demons), 85 (78.7%) claimed it was not ($X^2_{cal}=35.60$; $p=0.000$). Twenty (18.5%) felt htn was caused by food poisoning but 88 (81.5%) felt it was not so ($X^2_{cal}=42.82$; $p=0.000$). While 16 (14.8%) claimed it was caused by juju (remote enemy attacks), 92 (85.2%) claimed it was not ($X^2_{cal}=53.50$; $p=0.000$). All respondents (100%) affirmed that htn could not be caused by certain drugs e.g. steroids, non-steroidal anti-inflammatory drugs or condiments such as maggi^R, kuor^R, lycor^R ($X^2_{cal}=108$; $p=0.000$).

Although, majority 98 (90.70%) felt that the presence of htn indicated serious morbidity because of dangerous complications e.g. stroke, 10 (9.3%) did not feel so ($X^2_{cal}=71.71$; $p=0.000$). While 45 (42%) knew some of the risk factors such as excessive alcohol consumption, smoking or obesity, 63 (58%) did not know ($X^2_{cal}=3.00$; $p=0.082$). Though 80 (74%) attested to the fact that htn is correctly detected by BP measurement usually in a health facility, 28 (25.9%) did not so attest ($X^2_{cal}=25.03$; $p=0.000$). Of this 28 respondents, 16 (15%) were told by the traditional healers that they were hypertensive and 12 (11%) first believed they were hypertensive from what they learnt from friends / relatives or electronic and print media.

Forty-three (40%) indicated that headache was the prominent symptom, but 65 (60.2%) did not ($X^2_{cal}=4.48$; $p=0.034$). While 42 (38.9%) felt it was restlessness and / or palpitation, 66 (61%) did not feel so ($X^2_{cal}=5.34$; $p=0.020$). Twenty (18.5%) believed it was excessive pulsation of the superficial temporal artery anterior to the ear lobe but 88 (81%) did not believe so ($X^2_{cal}=42.82$;

Table 2. Hypertension-related knowledge and perceptions (N= 108, 100%).

Variable	Frequency of respondents			P- value	Remarks
	Yes (%)	No (%)	X^2_{cal}		
Hypertension					
a. is high blood pressure.	66 (61)	42 (38.9)	8.67	0.020	S
b. is excessive thinking, worries, stress etc.	22 (20)	86 (79.6)	38.00	0.000	S
c. is hereditary.	57 (53)	51 (47)	34	0.563	NS
d. is caused by witches and wizards(demons).	23 (21.3)	85 (78.7)	35.60	0.000	S
e. is caused by food poisoning.	20 (18.5)	88 (81.5)	42.82	0.000	S
f. is caused by juju/ remote enemy attacks.	16 (14.8)	92 (85.2)	53.50	0.000	S
g. can be caused by certain drugs/ condiments.	0(0)	108 (100)	108.00	0.000	S
h. has dangerous complications eg stroke.	98 (90.7)	10 (9.3)	71.71	0.000	S
i. risk factors: smoking, alcoholism, obesity	45 (42)	63 (58)	3.00	0.082	S
j. is detected by BP measurement.	80 (74)	28 (25.9)	25.03	0.000	S
Symptoms					
k. headache	43 (40)	65 (60.2)	4.48	0.034	S
l. restlessness/ palpitation	42 (38.9)	66 (61)	5.34	0.020	S
m. superficial temporal artery pulsation	20 (18.5)	88 (81)	42.82	0.000	S
n. internal heat	42 (38.9)	66 (61)	5.34	0.020	S
o. symptomless	11 (10)	97 (89.8)	68.48	0.000	S
p. know at least one treatment drug	32 (30)	76 (70)	17.92	0.000	S
q. is cured once and for all.	75 (69.4)	33 (30.6)	16.34	0.000	S
r. treatment is for life.	50 (46)	58 (53.7)	0.44	0.441	NS

X^2_{cal} – Chi-square calculated; S – Significant; NS – Not significant, a rather poor level of knowledge and perception is indicated.

Table 3. Attitudes and life-style practices by subjects (N= 108, 100%).

Attitudes and life-style practices	Frequency			P-value	Remarks
	Yes (%)	No (%)	X^2_{cal}		
a. Take drugs and attend clinic regularly?	36 (33.3)	72 (66.7)	12.00	0.000	S
b. Take drugs when I have symptoms?	52 (48)	56 (51.9)	0.15	0.700	NS
c. Also take alternative (traditional) medicines?	22 (20)	86 (79.6)	37.9	0.000	S
d. Take much table salt?	88 (81.5)	20 (18.5)	42.81	0.000	S
e. Use condiments in cooking?	68 (63)	40 (37)	7.26	0.006	S
f. Take plenty of vegetables?	26 (21.3)	82 (75.9)	29.04	0.000	S
g. Take plenty of fruits?	24 (22.2)	84 (77.8)	33.24	0.000	S
h. Adhere to advice to lose weight?	14 (13)	94 (87)	39.25	0.370	S
i. Drink alcohol a lot?	44 (40.7)	64 (59.3)	21.34	0.000	S
j. Smoke or use tobacco very well?	30 (27.8)	78 (72)	71.70	0.000	S
k. Do regular exercises?	10 (9.3)	98 (90.7)	33.40	0.000	S

X^2_{cal} –Chi-square calculated; S – Significant; NS – Not significant, poor attitudes and inadequate life-style practices are demonstrated.

$p=0.000$). Another 42 (38.9%) claimed “internal heat” that is, feeling of excessive heat within the body, was the prominent symptom but 66 (61%) claimed it was not ($X^2_{cal}=5.34$; $p=0.020$). While 97 (89.8%) claimed htn has symptoms, only 11 (10%) knew htn to have no symptoms at all ($X^2_{cal}=68.48$; $p=0.000$).

Although, 32(30%) knew at least one treatment drug, 76 (70%) did not remember any ($X^2_{cal} = 17.92$; $p=0.000$).

Seventy-five (69.4%) believed htn could be cured once and for all time but 33 (30.6%) did not believe so ($X^2_{cal}=16.34$; $p=0.000$). While 50 (46%) knew treatment to be chronic and for life, 58 (53.70%) did not ($X^2_{cal}=0.44$; $p=0.441$).

Table 3 shows that while 36 respondents (33.3%) were adherent with medication-taking and follow-up, 72 (66.7%) were not ($X^2_{cal}=12.00$; $p=0.000$). Though 56

(51.9%) took their drugs regularly, 52 (48%) took drugs only when they had symptoms ($X^2_{\text{cal}}=0.15$; $p=0.700$). Twenty-two (20%) believed htn could also be treated with alternative (traditional) medicine which they sometimes used but 86 (79.6%) did not believe so and would not use traditional medicine ($X^2_{\text{cal}}=37.9$; $p=0.000$).

Eighty-eight respondents (81.5%) took much table salt but 20 (18.5%) did not ($X^2_{\text{cal}}=42.81$; $p=0.000$). While 68 (63%) used a lot of condiments in cooking, 40(37%) did not ($X^2_{\text{cal}} 7.26$; $p=0.006$). Twenty-six (21.3%) regularly took plenty of vegetables but 82 (75.9%) did not ($X^2_{\text{cal}}=29.04$; $p=0.000$). Whereas 24 (22.2%) took plenty of fruits, 84 (77.8%) did not ($X^2_{\text{cal}}=33.25$; $p=0.000$). Although, 14 (13%) adhered to dietary advice to lose weight, 94 (87%) did not ($X^2_{\text{cal}}=39.25$; $p=0.370$).

Forty-four respondents (40.7%) were heavy alcohol drinkers but 64 (59.3%) were not ($X^2_{\text{cal}}=21.34$; $p=0.000$). While 30 (27.8%) smoked or used tobacco excessively, 78 (72%) did not ($X^2_{\text{cal}}=71.70$; $p=0.000$). While 10 (9.3%) did regular exercises, 98 (90.7%) did not ($X^2_{\text{cal}}=33.40$; $p=0.000$).

Sixty-nine respondents (63.9%) suffered from depression, frustration, anxiety or fear of dying suddenly; 24 (22%) experienced adverse events (dizziness, tiredness, polyuria, headache, sexual dysfunction, oedema) and were actually disturbed about the long-term consequence of chronic consumption of antihypertensive medication, while majority 88 (81.5%) were distressed by the need for continued follow-up particularly when the BP was said to have been controlled. Most of the respondents 99 (92%) indicated that the cost of drugs was a particular burden that adversely affected their adherence with treatment and their family well-being. Twenty-one (19.4%) were unable to execute their normal work-load and 13 (12%) were being stigmatized because of the disease.

DISCUSSION

The more males in the study may be due to the fact that more often than not they are in control of the family income, hence there is the tendency for them to patronize the hospital more frequently as they can afford the treatment. There is also the gender bias in some Nigerian cultures including Auchi that lays more emphasis on male health (Cooper et al., 1998; Cappuccio et al., 2004). An interesting observation in this survey was that the patients, particularly the females, tended to be more hypertensive with age, a phenomenon that has been well documented (Kaplan, 2002; Akinkugbe, 2003).

Generally, there are many views about htn. Contrary to the commonly held notion by the non-medically informed that htn may be indicated by excessive worries, thinking or stress, 61% of our respondents knew htn to indicate high BP, the knowledge they might have acquired through clinic attendance. It is also gratifying that a good number knew that htn was recognized by BP

measurement rather than through an anxious or sad look, obesity, reserved personality or the presence of many concerns in an individual. While these features may be contributory factors to htn, they do not denote htn *per se* (Oke and Bandele, 2004). It is also noteworthy that 53% of the respondents had the valid perception that htn could be hereditary (Vikrant and Tiwari, 2001; Kaplan, 2002).

However, it is unfortunate that a reasonable number of our respondents currently on antihypertensive therapy, perhaps due to their poor educational background, still believed that htn could be caused by evil spirits, enemy remote attacks, or food poisoning. Sadly too is the fact that majority (89) of the hypertensives, the educated and illiterates inclusive, were unaware of the symptomless nature of the disease (the silent killer). These attributes may be responsible for their negative attitude to treatment together with high non-adherence and poor life-style adjustment including failure to take vegetables and fruits, the cheap and good sources of antioxidants and minerals that have beneficial effects on htn. Our observation is in contrast with the findings of Olivera et al. (2005) and Babaei et al. (2008) who reported that up to 90 - 96% and 89.6%, respectively, of their studied hypertensives demonstrated sufficient knowledge, valid perception and positive attitude to treatment of htn including implementation of adequate life-style practices.

According to Benson and Britten (2006) as well as Lusel et al. (2006), the patients' perception of illness may be influenced by their subjective beliefs. This may result in decreased reliance on medication and subsequent non-adherence as the patients may go on a wild goose chase searching for what is responsible for their dilemmas. Some patients may begin to titrate medications with traditional remedies concurrently or alternately according to their perceived symptoms. In this study, those who used traditional medicines were mainly the uneducated farmers and artisans. Since information is power and health is the first wealth, Lahdenpera and Kyngas (2001) as well as Thomson et al. (2001) have suggested that health-care professionals should promote patients' knowledge, correct perception, beliefs and attitude towards htn treatment by explaining in sufficient detail the nature, consequences and the pharmacological management of the disease including the benefits of life-style adjustments. It is important to stress that religious belief did not have a statistically significant influence on the outcome of this survey. Life-style is an important determinant of our physical health and its modification is an effective public health tool for successful treatment and control of htn (Mancia et al., 1990; Applegate et al., 1997; Kaplan 1995, 1998 and 2002; JNC 7, 2003; WHO 2003; He et al., 2005; Iyalomhe, 2005; Stewart et al., 2005). The WHO and International Society of Hypertension (ISH) have, therefore, recommended that all individuals, particularly hypertensives and those at risk, should adopt appropriate life-style practices (WHO/ ISH, 2004).

This study has shown that psychological factors, adverse effects and cost of drugs have unsalutary effect

on the patients' attitude to htn treatment. Recent studies by Wang et al. (2002) as well as Oke and Bandele (2004) have shown that hypertensives patients have competing problems such as poverty, depression and anxiety from the heavy financial burden imposed by htn management, fear especially of premature death and addiction, the threat of concomitant diseases such as diabetes, the lure of alternative (traditional) healers who claim to have permanent cure of htn and drug adverse effects e.g. orthostatic hypotension, dizziness, cough, headache, frequent urination and impotence. Indeed, some patients bewail that specific drugs are worse than htn itself because they feel quite well as asymptomatic hypertensives but begin to get annoying side effects with medications, the immediate benefit of which they cannot visualize. Choice of an antihypertensive drug should be driven by likely benefit in an individual patient, taking into account cost, concomitant diseases and problematic adverse effects of specific drugs (Hoffman, 2006).

Therefore, when healthcare providers raise the awareness of the possibility of side effects and related risks to patients and initiate motivational strategies that address these issues, they can directly challenge intentional (intelligent) non-adherence by which patients decrease or omit the prescribed dose in order to minimize side effects (Iyalomhe, 2007). It is also remarkable that whereas in the developed world prescription is predicated on compelling indications, in Nigeria and many other developing countries, antihypertensive prescription is based on the cost (Mari et al., 2006; Iyalomhe, 2007).

Although, high economic or social status and educational level impacted positively on medication adherence, it was not to a statistically significant level. All the same, prescribing an effective, inexpensive, once daily or twice daily medication, or using low doses of a two-drug regimen once or twice daily, use of fixed-dose combinations or sustained-release formulations, adjusted to suit the patient's daily routine and life-style as much as possible, will minimize side effects and improve patient adherence considerably (Iyalomhe, 2007). Moreover, persuading patients to continue taking sometimes expensive drugs for an asymptomatic disease is a challenge (Hoffman, 2006).

In conclusion, this study has shown that in Auchi the patients' knowledge of htn is low, their attitudes to treatment negative and their life-style practices grossly inadequate. Therefore, efforts should be geared towards improving the levels of knowledge of hypertensive patients through adequate information, education and communication. This will limit their wrong perceptions, particularly fear and the view of a chronic disease like htn as an intermittent illness that requires ephemeral treatment. To reduce the impact of psychosocial problems on patients and increase medication-use adherence, there is urgent need for government or its relevant agencies to initiate motivational strategies and interventions such as free antihypertensive treatment in government hospitals or inclusion of all antihypertensive

drugs in the national Essential Drugs List so that they can be purchased at very subsidized rates. Since 26% of the respondents were either first told by the traditional healers of their disease condition or first got information through relatives/friends or through newspapers, radio and television that they might be hypertensive, special programmes should be organized to upgrade the htn knowledge of traditional healers who will be there for a long time in developing countries as they meet the needs of a people deprived of optimum modern medicare. The mass media too should pay more attention to public enlightenment on health issues especially htn.

There are several limitations to the interpretations of this study. Currently, there is no standardized instrument available to assess htn knowledge, attitudes and life-style practices (Olivera et al., 2005). Hence we utilized the existing literature and experts in the field of htn to design a data collection instrument that would be somehow comprehensive and suitable enough to be used in a sub-urban area in Nigeria. Although the sample size is small, our goal however, was not to assess the prevalence of htn but to identify a group of hypertensive patients and to evaluate qualitatively their knowledge, attitudes and life-style practices. We did not discuss the results in terms of scores because we believe that an answer to each question provides some important information relevant to our study objective. Furthermore, since the questions did not carry equal weight of significance, creating an overall score or index may confer an inappropriate or artificial significance on the answers to some questions. Other limitations include the use of simple random sampling instead of cluster random sampling which should have given more unbiased result and the cross-sectional, non-randomized, non-matched nature of the survey. It is suggested that more studies with larger sample sizes and wider geographical spread be conducted using standardized methods, in order to comprehensively assess the htn knowledge, attitudes and life-style practices of Nigerian hypertensives.

Nevertheless, it is hoped that our findings will be worthwhile in health planning for the studied area and in implementing awareness programmes to improve knowledge, attitudes, life-style practices and control of htn in Nigeria.

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