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Knowledge, Attitude and Practice of Hypertensive Patients towards Hypertension in a Secondary Health Care Facility in Delta State

Aghoja OC[1*], Okinedo PO[1], Odili VU[2]

[1]Department of Clinical Pharmacy and pharmacy Administration, Faculty of Pharmacy, Delta State University Abraka, PMB 1 Abraka, Delta State, Nigeria

[2]Department of Clinical Pharmacy and Pharmacy Practice, Faculty of Pharmacy, University of Benin, Benin City, Edo State, Nigeria

Corresponding Author:

E-mail : stmajella@hotmail.com

Mob.: xxxxxxxxxxxxxx

Abstract

Developing countries undergoing epidemiological transition face the double burden of communicable and non communicable diseases. Although safe and effective drugs and evidence- based treatment guidelines are available, the management of hypertension remains sub-optimal. This was a descriptive prospective study **t**o determine the level of knowledge, practice and attitude (KAP) of hypertensive patients receiving medical care at Central Hospital Sapele towards hypertension. Pre-tested questionnaires were administered to 330 hypertensive patients, and the KAP of the patients assessed. Females 58.5% were more represented than males 41.5%. Respondents aged 65 and over were more represented (36.4%). A majority (43.3%) were unemployed, 58.8% were married and majority (51.2%) had a tertiary level of education. 8.8% were smokers while 25.5% alcoholics. Majority (53.3%) had family history of hypertension and most (36.7%) of them have had hypertension for over 5 years. 45.5% reported the presence of one or more co-morbidity of which diabetes mellitus (43.3%) was found to be the most co-morbid condition. Age, occupation, marital status and duration of hypertension were significantly related to KPA, p< 0.05. Only 53.3% reported satisfaction. Respondents demonstrated good knowledge and attitude but very good practice towards hypertension. The most prevalent co-morbid condition with hypertension was found to be diabetes mellitus. Majority of the respondents were satisfied with the level of care received from this institution.

1 Introduction

Hypertension has been identified as a prime risk factor for cardiovascular diseases[1-3]and WHO has reported that about 62% of cardiovascular and 49% of ischemic heart disease burden worldwide are attributable to poorly controlled hypertension[4].Less than 20% of cases of hypertension have been reported to be controlled[5]. Hypertension has been estimated to cause about 7.1 million deaths every year. This accounts for 13% of all deaths worldwide.[6,4,7,8].

Several studies have shown that patient's paucity of knowledge, and poor lifestyle practices have hindered the achievement of blood pressure target goals[9-13]. A number of previous community surveys in Nigeria have identified a steady rise in

the prevalence of hypertension, rising from 11.2% in the 1990s (National expert committee on non-communicable diseases in Nigeria) to 27.9% in 2010 in a rural community in Niger Delta[14], and 22.6% in 2009 among a suburban Christian community in South-Western Nigeria[15].

Studies have shown that the awareness of hypertension in Nigeria is poor, as only 33.8% are aware of their condition.[16-18] Poor knowledge; attitude and practice of hypertensive patients can have deleterious consequences on the overall health of the patients.

The objectives of this study were to determine the Knowledge, Attitudes and Practice of hypertensive patients towards hypertension, and to determine the prevalent co-existing

condition with hypertension amongst hypertensive patients as well as to determine the perceived level of satisfaction and care received by hypertensive patients in Central Hospital Sapele (CHS).

2 Methods

2.1 Study design

This study was a cross sectional descriptive survey of adult patients attending the outpatient department of Central Hospital Sapele over a period of six months.

2.2 Settings and study population

The Central Hospital, Sapele is a secondary health institution located in Sapele local government area of Delta State situated in the south-south part of Nigeria. This hospital has a very high patient output compared to some other secondary health care facilities in Delta State. The residents of the town come from different socio-economic strata as well as diverse ethnic groups in Sapele. However, the Urhobos, Okpe, Ijaws and Itsekiris form the majority.

The hospital is a 250- bed facility that cares for both in-patients and out-patients. The wards are situated at various locations within the hospital and consist of the Male Medical ward, Male Surgical ward, Female Medical ward, Female Surgical ward, Accident and Emergency unit, Obstetrics and Gynaecology ward, Pediatric ward, Psychiatric ward and Chest ward. There is also a Pharmacy and Radiology department, and a hospital laboratory.

The hospital is a teaching facility for medical students, house officers, pharmacy interns, medical laboratory scientists and physiotherapy interns.

The hospital has a pharmacy department which has nine pharmacists, of which five were intern pharmacists as at the time of this study.

2.2.1 Case Selection

Inclusion criteria: Adult patients aged 18 years and above, diagnosed of hypertension and currently receiving treatment and who gave informed consent to participate in the study.

Excluded from the study are comatose patients**,** patients who did not give their consent**,** and mentally deranged patients.

Sample size: A sample size of 300 was obtained using the formula,($n = Z^2 . pq/d^2$)[19] which was then made up to 350 to make up for losses and incomplete data. Patients who met the inclusion criteria were recruited consecutively until the required sample size was obtained.

2.2.2 Instrument for data collection

The research instruments used for data collection included a pre-tested questionnaire, self- made calibrated meter rule and bathroom scale. The required information was elicited using a pre-tested questionnaire that was self-administered on hypertensive patients during regular clinic appointments and for those who could not read, the interviewer read the questions to them and their responses filled in the questionnaire.

The questionnaire consisted of two sections- A and B. Section A comprised of items relating to respondents' demographics. Section B comprised items centered on knowledge, practice and attitude towards hypertension.

2.3 Ethical consideration

Ethical/ administrative approval was obtained from the management of the hospital prior to the commencement of the study.

2.4 Data management and statistical analyses

Collected data were coded as per item and fed into Statistical Package for Social Sciences (SPSS V.20) for descriptive and inferential statistics. Responses from patient's knowledge, practices and attitude were transformed to scores ranging from 0 to 100. A score of 0 and 1 were assigned for correct and incorrect responses respectively. Total scores were categorized and valued as weak (0<score≤25), moderate (25<score≤50), good (50<score≤75) and very good (75<score≤100). Subgroup analyses of knowledge, practices and attitude were performed based on the socio-demographic variables. Student t-test and one-way ANOVA were employed to test for associations at 95% confidence interval using SPSS, which reported exact P-values. P-values less than 0.05 were considered significant.

3 Results

The socio-demographic characteristics of the respondents are as shown in table 1. Of the 330 respondents, more than half were females 193 (58.5%), majority of them120 (36.4%) were aged 65years, employed 229 (69.4%), married 194 (58.8%), had tertiary education 169 (51.4%), and had a family history of hypertension 176 (53.3%). Other socio-demographic characteristics are as shown in table 1.

The mean SBP and DBP for smokers was 150.52±16.55 and 97.93±14.73, this was significantly higher than that for non-smokers 144.63±12.69 and 89.83±13.75 (p<0.05). Similarly, the mean SBP and DBP for those that drink alcohol was 149.05±12.86 and 96.31±14.02, respectively, and this was higher compared to those for non-drinkers: 143.78±12.99 and 88.58±13.44 respectively (p<0.05). This is as shown in table 2.

More than half 178 (53.9%) of the respondents had stage 1 hypertension, while a small number 34 (10.3%) had pre-hypertension. Interestingly, only 48(14.5%) of the respondents, had their blood pressure controlled. (Table 3)

Table 1: Socio-demographic characteristics

Variable (N=330)		Freq.	Percent
Age (yr)	18 to 24	1	0.3
	25 to 34	39	11.8
	35 to 44	51	15.5
	45 to 54	40	12.1
	55 to 64	79	23.9
	65 and over	120	36.4
Sex	Male	137	41.5
	Female	193	58.5
Occupation	Employed	229	69.4
	Unemployed	12	3.6
	Retired	69	20.9
	Student	20	6.1
Marital	Single	47	14.3
	Married	194	58.8
	Divorced	40	12.1
	Widow/widower	49	14.8
Level of education	Primary	24	7.3
	Secondary	118	35.8
	Tertiary	169	51.2
	None	19	5.8
History of smoking	Yes	29	8.8
	No	300	90.9
History of alcohol intake	Yes	84	25.5
	No	246	74.5
Family history of hypertension	Yes	176	53.3
	No	40	12.1
	Not sure	114	34.5
Duration of hypertension(yr)	0 to 5	92	27.9
	5 to 10	121	36.7
	More than 10	68	20.6
	Not sure	49	14.8

A good number of the respondents had diabetes mellitus as a co morbidity (19.7%), heart problem (0.6%), stomach ulcer (7.3%) arthritis (11.5%) and others (6.1%). (Fig 1)

The mean knowledge score for the respondents was good (56.5%), only a few (15.2%) of the respondents knew that hypertension is asymptomatic. Most of the respondents (83.3%) did not know their target blood pressure but, 84.9% knew what normal blood pressure should be. The mean positive practice response was 56.5%; however, less than half 41.8% respondents check their blood pressure regularly, and only

9.5% of them eat an appropriately healthy diet. This is as shown in table 4.

Age, occupation, marital status, and duration of hypertension significantly affected respondents knowledge of hypertension p< 0.05 (Table 5). Respondents' attitude was significantly associated with age, sex, occupation, marital status, and level of education, p<0.05 (Table 6). Similarly, right practices relating to hypertension was significantly associated with age, sex and level of education of respondents (Table 7).

More than half of the respondent (53.3%) reported satisfaction towards care received (Fig 2)**.**

4 Discussion

The female to male ratio in this study was 1.4:1, indicating that the female group was significantly more represented in this study. This is consistent with several studies that have shown that more women use health care facilities than men[20-22],reason being that females visit hospitals more regularly during their reproductive years and such are likely to be diagnosed of hypertension during these visits[23,21,22,24].

Hypertension is a chronic condition usually co-existing with other conditions like arthritis, diabetes, renal diseases amongst others. Diabetes was found to be the most prevalent co-existing disease with hypertension. This spells additional costs for the patients. This finding is in consonance with the report of a study carried out by a group of researchers[25]. Majority of the patients were overweight, and this finding is similar to a study done in Parkistan[26].

Despite the fact that these patients were receiving treatment from this Hospital (Sapele Central Hospital), and most of them have had hypertension for over 6 years, a majority of them had their blood pressure poorly controlled. This finding is consistent with the report from Nigeria by Aghoja et al[27].

Smoking and alcohol consumption have long been associated with an increase in blood pressure, and this study has shown that the mean systolic and diastolic blood pressures of smokers and alcohol consumers, when compared with that of non-smokers and those that do not drink alcohol were significantly higher. This finding may be because alcohol and smoking are both risk factors for hypertension. There was also a significant difference in the mean systolic and diastolic blood pressure levels of those with family history of hypertension and those without family history of hypertension.

In this study, respondents' average knowledge score was good (50<score<75). Olivera et. al in their study found that their respondents' overall knowledge was good but subjects had little information about particular factors (especially normal BP and hypertension management). Patients with chronic conditions sometimes find it difficult to accept that they have such a condition. This issue of denial is a well established fact[28]. In this

study, a few respondents denied having hypertension, even though they were receiving treatments for hypertension.

It was disheartening to know that majority of the patients for this study did not know that untreated or poorly controlled high blood pressure could pose dangers to the heart, brain, kidney and eye on a long term. This paucity of knowledge may in part, explain the reasons why most of the patients had their blood pressure poorly controlled.

Table 2: BP in relation to lifestyle and family history of hypertension

Item		MEAN SBP±SD	MEAN DBP±SD
History of smoking	Yes	150.52±16.55	97.93±14.73
	No	144.63±12.69	89.83±13.75
	P<0.05		
History of alcohol	Yes	149.05±12.86	96.31±14.02
	No	143.78±12.99	88.58±13.44
	P<0.05		
Family history of hypertension	Yes	148.18±11.98	92.90±13.35
	No	137.87±10.25	84.63±10.94
	Not sure	145.12±13.14	90.55±13.98
	P<0.05		

*: p is significant at 95% confidence interval; Note: SBP and DBP are systolic and diastolic blood pressure

Table 3: JNC 7 Classification of blood pressure

Item	Stage N = 330	Frequency (%)
<120/80mmHg	Normal	48 (14.5)
120-129/80-89mmHg	pre-hypertension	34 (10.3)
140-159/90-99mmHg	Stage 1	178 (53.94)
>160/100mmHg	Stage 2	70 (21.21)
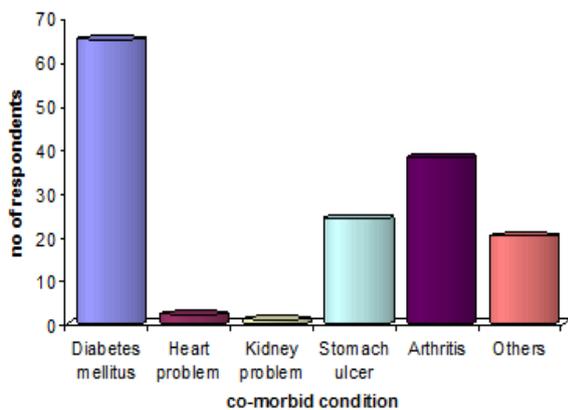
Fig 1: Distribution of co-morbidity

Symptoms emanating from mental tension or mental stress such as headache, dizziness and uneasiness are usually mistaken by people as cardinal symptoms of hypertension. This is an erroneous knowledge as hypertension is an asymptomatic condition. Consequent upon this, elevated blood pressure cannot be diagnosed based on such premise. Unfortunately, in the study majority of the respondents had no knowledge of this. This can be potentially inimical to treatment measures as patients may feel complacent about their condition when these perceived so-called symptoms are absent. This finding is consistent with that reported by Iyalomhe et al.[29] Although, most of the patients knew what the normal blood pressure is,a majority of them could not tell their expected target blood pressure levels. They may have obtained knowledge of the normal blood pressure when they were first diagnosed.

Once diagnosed of hypertension, treatment is life-long. There was no significant difference in the percentage of patients who knew and those who did not know that hypertension was a life-long condition and required medication for life. This poor knowledge is similar to that of the population studied by Iyalomhe et al.[29]

The overall practice of the respondents was good. Although, quite a number of them did not keep check of their blood pressure regularly, majority kept appointments with their physician. Despite the fact that most respondents reported adherence to their prescribed medications, a majority of them had poorly controlled blood pressure.

The World Health Organization (W.H.O) has attributed hypertension among Nigerians to High consumption of salt and fat, low consumption of fruits and vegetables and lack of physical activity[30].Although, almost all the respondents knew

that high salt intake, alcohol consumption, smoking and lack of exercise could increase blood pressure; they, had a poor attitude towards diet[30]. They consumed a lot of fatty foods and less fruits and vegetables. This could be attributed to the fact that most African diets are fatty in nature, and also most Nigerians do not usually have the habit of taking fruits because of the financial implication. This is consistent with the findings by a group of researchers in Ghana who reported financial situation, cost, convenience and availability as barriers to the consumption of fruits and vegetables among hypertensive patients[31].

Table 4: knowledge, attitude and practice of respondents towards hypertension

Knowledge Items		No (%)	Yes (%)	% Correct Response
1.	I have high blood pressure(hypertension)	50(15.15)	280(84.85)	84.5
2.	Untreated high blood pressure can pose danger to the kidney, brain, eyes and heart	225(68.18)	105(31.82)	31.82
3.	Blood pressure can rise without having any warning symptom	280(84.85)	50(15.15)	15.15
4.	I know what the normal blood pressure should be	40(12.12)	290(87.88)	84.85
5.	I know at least one treatment drug for my hypertension	60(18.18)	270(81.82)	81.82
6.	I know what my target blood pressure is	275(83.33)	55(16.64)	16.64
7.	Hypertension is treated for life	195(59.09)	135(40.91)	40.91
8.	High salt and alcohol intake, smoking and lack of exercise can increase blood pressure	9(2.72)	321(97.27)	97.27
MEAN			**56.52**	
Attidude Items		NO (%)	YES (%)	% Positive Response
1.	I believe hypertension affects only the rich	321(97.27)	9(2.72)	97.27
2.	I believe hypertension affects only those who think a lot	302(91.52)	28(8.48)	91.52
3.	I believe hypertension is a spiritual disease	323(97.88)	7(2.12)	97.88
MEAN			**95.56**	
Practice Items				
1.	I do regular self checks on my blood pressure at least once a week	192(58.18)	138(41.82)	41.82
2.	I eat less of fatty foods and more of fruits and vegetables	299(90.61)	31(9.39)	9.39
3.	I keep appointments with my doctor always	38(11.52)	292(88.48)	88.48
4.	I take my drugs as I am told to	36(12.00)	294(89.09)	89.09
MEAN			**57.19**	

The respondents' age was significantly associated with their Knowledge, attitude and practices towards hypertension. This is different from reports of a study in Ghana which reported employment as the only characteristic that influenced the knowledge of respondents positively[32]. The older the respondents age the higher the knowledge but respondents between the ages of 35 to 44 demonstrated best practices towards hypertension.

There was no significant difference in knowledge between male and female.

Table 5: Inferential statistical analysis of respondents' knowledge

Item		Frequency (%)	Mean Knowledge±SD	Test Statistic	P-Value
Age (yr)	18 to 24	1 (0.3)	50.00	F = 10.881	**0.000**
	25 to 34	39 (11.8)	39.10±15.49		
	35 to 44	51 (15.5)	43.87±12.59		
	45 to 54	40 (12.1)	43.44±15.50		
	55 to 64	79 (23.9)	54.59±14.60		
	65 and over	120 (36.4)	52.81±13.01		
Sex	Male	137 (41.5)	47.99±15.33	t = 1.123	0.262
	Female	193 (58.5)	49.87±14.71		
Occupation	Employed	229 (69.4)	48.25±14.89	F = 3.372	0.004
	Unemployed	12 (3.6)	55.21±9.91		
	Retired	69 (20.9)	53.08±13.79		
	Student	20 (6.1)	41.25±18.18		
Marital status	Single	47 (14.3)	40.69±15.08	F = 7.058	0.000
	Married	194 (58.8)	49.48±14.67		
	Divorced	40 (12.1)	53.13±13.80		
	Widow/widower	49 (14.8)	52.3±14.98		
Level of education	Primary	24 (7.3)	52.60±16.48	F = 2.567	0.054
	Secondary	118 (35.8)	51.48±14.54		
	Tertiary	169 (51.2)	47.04±15.14		
	None	19 (5.8)	48.03±11.98		
Duration of hypertension	0 to 5	92 (27.9)	44.16±15.22	F = 10.290	0.000
	5 to 10	121 (36.7)	53.51±14.45		
	More than 10	68 (20.6)	51.65±12.39		
	Not sure	49 (14.8)	43.88±15.12		

*: p is significant at 95% confidence interval

However, females demonstrated a better attitude towards hypertension, but males, better practice. The unemployed and retired seemed to demonstrate better knowledge and attitude towards hypertension than the employed. This could be because they have more time to read publications and listen to jingles on hypertension than the employed because of their busy working schedule. This is in contrast to the findings of research that reported employed respondents as having adequate knowledge about hypertension.

Respondents' duration of hypertension did not significantly affect their attitude and practice. However, there was a strong association between duration of hypertension and knowledge. Those with hypertension for over five years demonstrated better knowledge than those who have had hypertension for less than five years. This is probably due to the fact that they must have

acquired knowledge over the years they have had hypertension as a result of repeated counseling and advice by health professionals.

Table 6: Inferential statistical analysis of respondents' attitude

Item		Frequency (%)	Mean Attitude±sd	Test Statistic	P-Value
Age group(yr)	18 to 24	1 (0.3)	66.67	F = 6.913	0.000
	25 to 34	39 (11.8)	95.73±11.29		
	35 to 44	51 (15.5)	92.81±13.85		
	45 to 54	40 (12.1)	95.85±11.16		
	55 to 64	79 (23.9)	91.56±15.53		
	65 and over	120 (36.4)	99.44±4.29		
Sex	Male	137 (41.5)	93.92±13.54	t = 2.166	0.040
	Female	193 (58.5)	96.72±9.96		
Occupation	Employed	229 (69.4)	94.32±12.94	F = 3.589	0.014
	Unemployed	12 (3.6)	100.00±0.00		
	Retired	69 (20.9)	99.03±5.63		
	Student	20 (6.1)	95.00±12.21		
Marital status	Single	47 (14.3)	90.78±15.07	F = 4.501	0.004
	Married	194 (58.8)	95.70±11.70		
	Divorced	40 (12.1)	95.83±4.76		
	Widow/widower	49 (14.8)	99.32±4.76		
Level of education	Primary	24 (7.3)	91.67±14.74	F = 3.052	0.029
	Secondary	118 (35.8)	96.33±11.35		
	Tertiary	169 (51.2)	96.25±10.56		
	None	19 (5.8)	89.47±15.92		
Duration of hypertension	0 to 5	92 (27.9)	96.01±10.87	F = 0.414	0.742
	5 to 10	121 (36.7)	95.04±12.66		
	More than 10	68 (20.6)	96.57±10.2		
	Not sure	49 (14.8)	94.56±12.45		

*: p is significant at 95% confidence interval

5 Conclusion

The respondents had adequate knowledge and practices relating to hypertension.

6 Acknowledgement

We the authors wish to thank the staff and management of Central Hospital Sapele for giving us the opportunity to undertake this study in their facility.

7 Conflict of Interest

We declare no conflict of interest regarding this study.

8 Author's Contribution

AOC conceived the study, revised the initial draft and prepared the manuscript for publication.

OPO participated in data collection and analysis and the initial draft of the manuscript.

OVU proofread, edited and revised the manuscript for publication.

Table 7: Inferential statistical analysis of respondents' practice

Item		Frequency (%)	Mean Practice±sd	Test Statistic	P-value
Age group(yr)	18 to 24	1 (0.3)	66.67	F = 4.156	0.001
	25 to 34	39 (11.8)	68.38±11.97		
	35 to 44	51 (15.5)	71.90±11.78		
	45 to 54	40 (12.1)	75.42±9.98		
	55 to 64	79 (23.9)	68.35±13.50		
	65 and over	120 (36.4)	66.67±10.36		
Sex	Male	137 (41.5)	70.8±11.03	t = 2.162	0.031
	Female	193 (58.5)	67.96±12.26		
Occupation	Employed	229 (69.4)	68.85±11.89	F = 0.411	0.745
	Unemployed	12 (3.6)	68.06±11.14		
	Retired	69 (20.9)	69.57±12.11		
	Student	20 (6.1)	71.67±10.95		
Marital status	Single	47 (14.3)	70.57±12.63	F = 0.998	0.394
	Married	194 (58.8)	68.21±11.77		
	Divorced	40 (12.1)	70.00±11.45		
	Widow/widower	49 (14.8)	70.75±11.55		
Level of education	Primary	24 (7.3)	68.75±12.35	F = 4.590	0.004
	Secondary	118 (35.8)	66.67±11.73		
	Tertiary	169 (51.2)	70.11±11.63		
	None	19 (5.8)	76.32±10.12		
Duration of hypertension	0 to 5	92 (27.9)	70.65±11.94	F = 0.996	0.395
	5 to 10	121 (36.7)	69.01±11.65		
	More than 10	68 (20.6)	67.40±10.94		
	Not sure	49 (14.8)	69.05±13.18		

*: p is significant at 95% confidence interval
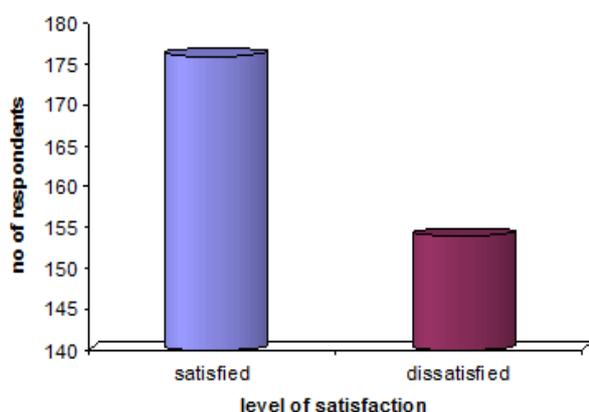
Fig 2: Level of satisfaction of respondents towards care received in the hospital

9 References

1. He J, Whelton PK. Elevated systolic blood pressureand risk of cardiovascular and renal disease: overview of evidence from observational epidemiological studies and randomized controlled trials. Am Heart J. 1999; 138: S211-S219.

2. Joint National Committee (JNC) on Prevention, Detection, Evaluation and Treatment of High Blood Pressure: The JNC 7th Report. JAMA 2003; 289: 2560-2572.

3. He J, Markandu ND, Sagrella GA, MacGregor GA. Modest sat reduction lowers blood pressure in both isolated systolic hypertension and combined.2005;

4. World Health Organization. Cardiovascular disease in the Africa Region; Current Situation and Perspectives. Report of the Regional Director (WHO-Africa).2005; 55th session, Maputo, Mozambique, 22-25 August.

5. Murray MD, Darnell J, Weinberger M. Factors contributing to medication noncompliance in elderly

public housing tenants. Drug IntellClin Pharm.1986; 20, 146.

6. Kearney PM, Whelton M, Reynolds K, Muntner P, Whelton PK, He J. Global burden of hypertension. J. Hypertens.2004; 22(1): 140.

7. Bhatt DL, Steg PG, Ohman EM. International prevalence, recognition and treatment of cardiovascular risk factors in outpatients with atherothrombosis. JAMA. 2006; 295: 180-189.

8. Gunaranthne A, Patel JV, Potluri R, Gill PS, Hughes EA, Lip GYH. Secular trends in the cardiovascular risk profile and mortality of stroke admissions in an innercity, multiethnic population in the United Kingdom (1997-2005). J. Hum. Hypertens.2008; 22: 18-23.

9. Hennis A, Wu SY, Nemesure B, Leske MC. Hypertension prevalence, control and survivorship in an Afro-Caribbean population. J. Hypertens. 2002; 20(12): 2363-2369.

10. Mari H, Ukai H, Yamamoto H. Current status of antihypertensive prescription and associated blood pressure control in Japan.   Hypertens. Res. 2006; 29: 143-151.

11. Iyalomhe. Compliance to antihypertensive therapy. Nig. Clin. Rev. J.2007; 63: 12-16.

12. Ong KL, Cheung BM, Man YB, Lau CP, Lam KSL. Prevalence, awareness, treatment, and control of hypertension among United States adults 1999-2004. Hypertension 2007; 49: 69-75.

13. Petrella RJ, Merikle EP, Jones J. Prevalence, treatment and control of hypertension in primary care: Gaps, trends and opportunities. J. Clin. Hypertens. 2007; 9(1): 28-35.

14. Wokoma FS, Alasia DD. Blood pressure pattern in Barako Rural rural community in Rivers State, Nigeria. Niger Health. 2011; 11:8-13.

15. National Expert committee on non-communicable diseases in Nigeria.Final report of a national survey. Lagos. Federal Ministry of a national survey. Lagos: Federal Ministry of of health and social services; 1997.

16. Adefuye BO, Adefuye PO, Oladikpo OT, Familono OB Oluruya TO. Prevalence of hypertension and other cardiovascular risk factors in African Suburban religious community. Niger med Pract J 2009; 55:4-8.

17. Familoni OB. Hypertension – how much do our patients know? African Health. 2002; 24(3): 13.

18. Akinkugbe OO. Current epidemiology of hypertension in Nigeria. Arch. Ibadan Med.2003; 1: 3-5.

19. Kadiri S. Tackling cardiovascular diseases in Africa. BMJ West African Edition 2005; 8(4): 172-173.

20. Lwang SK, Lemeshow S. Sample size determination in Healtth Studies. A practical manual Geneva, World Health Organization. 1991; 24-5.

21. Waldron I. Sex differences in illness incidence, prognosis and morality: issues and evidence. SocSci Med. 1983; 17:1107-23.

22. Verbrugge IM, Wingard DL. Sex differentials in health and morality. Women health. 1987; 12: 103-45

23. Hibbard JH, Pope CR. Gender roles, illness orientation and use of medical services. SocSci Med.1983; 17: 129-37.

24. Gjibers Van Wijk CMT, Kolk AM, Van Den Bosch, Van Den Hoogen HJM. Male and female morbidity in general practice: the nature of sex differences. SocSci Med 1992; 35:665-78.

25. De Courten MP, Petitt DJ, Knowler WC. Hypertension in Prima Indians: prevalence and risk factors of microalbuminaria in a cohort of African-American women with gestational diabetes. Diabetes care 2001; 24:1764-1769.

26. Dodani S, Mistry R, Farooqi M, Kwaja A, Qureshi R,Kazmi K. Prevalence and awareness of risk factors and behaviours of coronary heart disease in an urban population of Karachi, the largest cityof Pakistan; a community based survey. J public health. 2004; 26: 245-9.

27. Aghoja OC, Arute JE, Ovwighose OS, Erah PO, Eniojukan JF(2015). Patterns of Drug Use and Adherence in the Management of Hypertension in a Health Care Facility in Warri, Delta State, Nigeria. UK Journal of Pharmaceutical and Biosciences. 2015;3(3): 1-8.

28. Goldbeck R. Denial in physical illness. J Psychosom Res 1997; 43:575-593.

29. Iyalomhe GBS, Omogbai EKI, Ozolua RI. Electrolyte profiles in Nigerian patients with essential hypertension. Afric. J. Biotech. 2008; 7(10): 1404-1408.

30. World Health Organization. Nigerians wake up to high blood pressure. Bull World Health Organ. 2013;91; .241-243.

31. Odedosu T, Shoenthaler A, Vieira D, Agyemang C, Ogedegbe A. Overcoming barrier to hypertension

control in African Americans: Cleveland Clinic Journal of Medicine. 2012; 79(1):46-56.

32. Lucan SC, Barg FK, Long JA. Promoters and barriers to fruits, vegetable, and fast-food consumption among urban, low income African Americans-A qualitative approach. American Journal of public health. 2010; 100:631-635.