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RESEARCH ARTICLE

DETERMINANTS OF ADHERENCE TO TREATMENT AND NUTRITIONAL COUNSELLING AMONG HYPERTENSIVE PATIENTS IN A SECONDARY HEALTH FACILITY IN SOUTH-WESTERN NIGERIA.

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Abstract

Introduction: It is estimated that almost one half of hypertensive patients drop out entirely from treatment within one year for various reasons. A major factor accounting for inadequate treatment of hypertension is poor adherence to both drugs treatment and nutritional diet as instructed by the physicians.

Methodology: This descriptive cross sectional study was carried out in Osogbo Local Government Area. A systematic random sampling procedure was used to select the 375 respondents who were interviewed using a semi-structured self developed questionnaire. Statistical Package for Social Sciences 22 was used for analysis

Result: Mean age of respondents was 56.34±14.34years. More than 80% reported good adherence to various dietary counselling such as reduction in salty, starchy and fatty food as well as alcohol. Others found it difficult to change their habits. Good adherence to medication and clinic appointments were found among 207 (55.9%) though 291(78.0%) claimed they were aware of the complications. Reasons for non-adherence were forgetfulness 101(93.5%) and financial constraints 97(89.8%). Age, sex, marital status, occupation, place of living, monthly income and religion were found to be significantly associated with adherence to nutritional counselling. The study also reveals that only the use of herbal medicine was significantly associated with adherence to medication.

Conclusion: Studies that may show importance of support group to improve adherence is necessary as in other chronic illnesses such as HIV and Tuberculosis. Health personnel should adhere to standards of providing adequate information through counselling as need be. Patients should take responsibility of their health and adhere to health instructions.

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Introduction:-

Hypertension, a leading cause of mortality and the third largest cause of disability is poorly controlled worldwide. It is estimated that almost one half of patients drop out entirely from treatment within one year and the failure to control hypertension takes an unacceptable hold on patients and their families (Akinkugbe, 1996).

Nigeria is experiencing urbanization and modernization which causes changes in diet and physical activities particularly in the cities. Like many other developing countries as a result of increased longevity and improvement in the standard of living as well as the influence of the western lifestyle such as cigarette smoking and alcohol consumption, hypertension has assumed a major public health dilemma. As a result, risk factors for hypertension such as sedentary lifestyle, obesity, consumption of fatty food and resultant dyslipidemia are highly prevalent sometimes in epidemic proportion (Bovet et al 2008, WHO 2003).

A major factor accounting for inadequate treatment of hypertension is poor adherence to both drugs treatment and nutritional diet as instructed by the physicians.

The nutritional transition, which is accompanied by equal rapid changes in levels of physical activity sedentary occupations, increased use of labour-saving devices at work and home is on the increase. This brings about changes in income profiles and body composition which in most cases leads to obesity (Barry and Pelletier, 2001; F.A.O., 2001). The role of nutrition in disease control is undeniable and diet is one of the most effective non pharmacological strategies and studies evidenced that healthy nutrition has beneficial effects on cardio metabolic parameters, but behaviour change and maintenance are not easy because the greatest responsibility in dietary adherence is on the patients. Poor adherence nutrition is especially common when a patient has poor knowledge, understanding and perception of his/her health condition or when a complex or/and expensive anti-hypertensive drug regime is prescribed sometimes also with unusual side effects.

It is usual to consider patients to be sufficiently compliant with their treatment when they take at least 80% of their prescribed anti-hypertensive drugs. In outpatients, adherence to anti-hypertensive medication ranges from 20% to 80% (Martin U and Nwankwo 1990, Crammer J. A. 1998). However, a review of World Health Organization, 2002, found that in developed countries adherence to long term therapies including hypertensive therapy in the population is around 50% and is as lower in low income countries including Nigeria.

Adopting unhealthy lifestyle and non-adherence with prescribed dietary habit is associated with uncontrolled hypertension as well as the risks of developing complications (Campell et al 2006). Adherence with hypertensive to medication and dietary life style has been shown to reduce the risk of stroke and coronary heart disease by estimate of a 42% and 31% respectively, (Law et al 2003). Studies also revealed that nutritional therapy improves life expectancy and quality of life.

It was revealed that two-thirds of patient who died from stroke had a history of hypertension. It is suggested that prevention of stroke in these populations should include control of high blood pressure where an adherence to quality hypertensive therapy is important (Chobanion et al 2003, Mazzaglia et al, 2009).

Little has been documented on the cause of poor adherence due to financial constraint, ignorance etc, therefore this study aimed to investigate the facts affecting adherence to medication and nutrition counseling among hypertensive patients in State Specialist Hospital, Osogbo.

The aim of this study is to assess the factors affecting adherence to medication and nutritional counseling among hypertensive patients in State Specialist Hospital, Osogbo.

Methodology:-

This descriptive cross sectional study was carried out in Osogbo Local Government Area, which is one of the 30 Local Government Areas in Osun State, South West of Nigeria. The target population was the adult patients within the age >18 years attending the hypertension clinic of the state-owned General Hospital, Asubiaro, Osogbo, Osun state. It is a secondary health facility receiving referrals from primary and comprehensive health centres within and outside Osogbo city. It is located within the heart of the city within reach of community members. It is fairly well staffed with health professionals and with modern equipment. The hypertension clinic which is a specialist clinic

runs once a week and patients are usually counseled on various aspects of modifiable risk factors such as diet and physical activities apart from medication prescription.

Ethical clearance was obtained from the state ministry of health and permission to carry out the study was gotten from the hospital management as well as the consultant in charge of the Hypertension clinic.

A systematic random sampling procedure was used to select the respondents using every other patient that meet up with the inclusion criteria on the clinic days. All adults within the age >18years, who consented, were interviewed through a self-developed but validated, pre-tested, semi-structured, interviewer-administered questionnaires. Patients who are too sick were excluded from the study. A minimum sample size of 310 was arrived at using the Lang, J. Stoekeid 1963 formula for population greater than 1,000 and taken into consideration a non-response rate of 10%. The questionnaires were manually sorted out and analyzed using statistical package for social sciences (SPSS) version 22 on the computer. Appropriate cross tabulations and test statistics were applied and the p-value set at p=<0.05.

Results:-

A total of 375 questionnaires were administered and 370 were retrieved giving response rate to be 98.7 %. Mean age of respondents was 56.34±14.34years. More than half 255(68.9%) were male while 115(31.1%) were females. Majority 272 (73.5%) were married. Considerable number, 173(46.8%) of the respondents had no formal education while 60(16.2%) had up to tertiary education level. High proportion of the respondents, 169(45.7%) were traders, 82(22.2%) were civil servant while 18(4.9%) were retiree. Higher percentage of respondents were living in urban area while 66(17.8%) live in rural area. More than half 204(55.1%) source for their funds through daily payment while 121(32.7%) source for it through monthly salary. Majority 238(64.3%) of the respondents were Muslims and 123(33.2%) were Christians. (Table 1)

Table 1:- Socio-demographics characteristics of Patients (N=370)

Socio-demographic variables	Frequency (n)	Percentage (%)
Age (year)		
≤ 20	5	1.4
21- 30	16	4.3
31-40	48	12.9
41-50	49	13.2
51-60	97	26.2
>60	155	41.9
Sex		
Male	255	68.9
Female	115	31.1
Marital status		
Single	28	7.6
Married	272	73.5
Divorced	19	5.1
widowed	51	13.8
Educational status		
No formal education	173	46.8
Literate	62	16.8
Primary	36	9.7
Secondary	39	10.5
Tertiary	60	16.2
Occupation		
Unemployed	32	8.6
Civil servant	82	22.2
Retiree	18	4.9
Traders	169	45.7
Self employed	69	18.6
Place of living		

Urban	304	82.2
Rural	66	17.8
Source of income		
Monthly salary	121	32.7
Pension	45	12.2
Daily paid	204	55.1
Monthly income(naira)		
10000-30000	206	55.7
31000-60000	101	27.3
61000-80000	19	5.1
81000 and above	44	11.9
Religion		
Christian	123	33.2
Muslim	238	64.3
Free thinker	9	2.4

Mean age = 56.34±14.34 years

In table 2, few 64(17.3%) smoke cigarette while majority 306(82.7%) do not. Out of sixty-four patients that smoke, 32(8.4%) smoke one-to-two sticks per day, 22(5.9%) smoke three-to-four sticks while 10(2.7%) smoke more than five sticks. Many 312(84.3%) of the studied patients don't drink alcohol and only 58(15.7%) reported they do drink. Only 80 (21.6%) of the respondents use herbal medicine while many 290(78.4%) do not.

Table 2:- Social habits of respondents

Variables	Frequency(n)	Percentage(%)
Smoking habit		
Smoke	64	17.3
Do not smoke	306	82.7
No of cigarette smoke(n=64)		
1-2	32	8.4
3-4	22	5.9
>5	10	2.7
Alcohol consumption habit		
Drink	58	15.7
Not drinking	312	84.3
Quantity of 60cl bottle consumed (n=58)		
1 bottle per day	15	25.9
2-5 bottle per day	29	50.0
More than 5 per day	14	24.1
User of herbal medicine		
Users	80	21.6
Non-users	290	78.4
Reasons for users (n=80)		
Because its contents are natural	7	8.7
Cultural good healthy wise	4	5.0
For quick recovery	10	12.5
Peoples advice	12	15.0
Its affordable	47	58.8

Most of the respondents have the disease condition diagnosed within one year of data collection 231(65.6%). Majority 336(90.8%) of the patients were diagnosed at the hospital/health post while 20(5.4%) were first detected during religious medical outreaches (Christianity 16; 4.3% and Islam 4; 1.1%). More than half 238(64.3%) reported that they carried out some test while 132(35.7%) were not. Out of two-hundred and thirty eight that had the test including Chest X-ray, Blood and urine test etc even though some could not remember the exact name of the tests (Table 3). As many as 68(18.4%) indicated they had another disease apart from high blood pressure. Considerable proportion 37(10.0%) of those that had other disease claimed they had Diabetes. Higher proportion 304(82.2%) of

the studied patients reported that they were counseled on their ailment while 66(17.8%) were not counseled. Majority 257(84.5%) of those that were counseled said they were counseled on diet and usage of their drugs, 195(64.2%) were counseled on low salt intake while 71(23.4%) were counseled about healthy lung and life style (Table 3)

Table 3:- Awareness and knowledge of patients on past history of their disease

Variables	Frequency(n)	Percentage(%)
Duration of disease (n=352)		
≤1	231	65.6
2-5	69	19.7
6-10	41	11.6
>10	11	3.1
Where it was diagnosed		
Hospital	336	90.8
Church/Mosque(health programme, outreach)	20	5.4
Health post	14	3.8
Do you carry out some test		
Yes	238	64.3
No	132	35.7
*If yes, what are the test (n=238)		
Urine test	135	56.7
Blood test	94	39.5
Chest X-ray	218	91.6
ECG test	65	27.3
Cholesterol	87	36.6
Do you have any other disease rather than high blood pressure		
Yes	68	18.4
No	302	81.6
If yes, which one(n=68)		
Febrile illness	3	0.8
Kidney problem	5	1.4
Stroke	6	1.6
Diabetes mellitus	37	10.0
Others	17	4.6
Were you counseled		
Yes	304	82.2
No	66	17.8
*If yes about what(n=304)		
About adequate diet and usage of drugs	257	84.5
About drugs and adequate exercise	145	47.7
About nutrition intake	123	40.5
About healthy lung and life style	71	23.4
About Low salt intake	195	64.2
About regular check up	135	44.4

- **Multiple responses allowed**

On patients' adherence to nutritional counseling; Table 4 reveals that majority 295(79.7%) stated that they know hypertensive patients have a special diet while 75(20.3%) were not aware. The studied patients stated that they were counselled to be taking low salty food (207; 73.7%), low cholesterol (117; 41.6%), low refined sugar and starchy food (123; 43.8%); avoidance / reduction of alcohol (175; 62.1%) etc. However, 304(82.2%) reported that they were able to abide with their nutritional dictates out of which 121(32.7%) did so to avoid complication, 82(22.2%) felt it would contribute to controlling their blood pressure while 47(12.7%) said it was just because they cherish their health. Most of those that couldn't abide indicated that it was due to difficulty to change habits they have been used to (57; 15.4%).

Table 4:- Patient adherence to nutritional counseling.

Variables	Frequency(n)	Percentage (%)
Do you know that hypertensive patients has a special diet		
Yes	295	79.7
No	75	20.3
*Counselling received about diet/nutrition(n=281)		
Low salty food	207	73.7
Low cholesterol/fat containing meal	117	41.6
Reduce starchy food and refined sugar	123	43.8
Reduced /avoid alcohol	175	62.3
Liberal fruit	81	28.8
Good and adequate diet	93	33.1
Do you abide with nutrition		
Yes	304	82.2
No	66	17.8
If yes, why(n=304)		
I cherish my health	47	12.7
for my safety	33	8.9
To avoid complication	121	32.7
To control my blood pressure	82	22.2
To keep feet always and healthy	21	5.7
If no, why(n=66)		
Due to difficulty to change habit	57	15.4
Due to Nigeria economy status / financial constraint	3	0.8
I eat anything I feel like eaten	6	1.6

Table 5 shows the patients' adherence to medication and clinic appointments. It reveals that just a little more than half 207(55.9%) were attending clinic appointments without skipping at all. Only 108 (29.2%) skipped the last 2 consecutive appointments with considerable proportion of them, 101(93.5%) claiming that it was due to forgetfulness attitude while 97(89.8%) said it was due to financial constraint. Moreover, majority 291(78.6%) of the studied patients were aware of the complications of hypertension with 227 of them (78.0%) of the patients mentioning stroke as the major complication of hypertension. Most of the respondents 298(80.5%) reported having their blood pressure measured regularly. About the same proportion 297 (80.3%) of those that do have regular blood pressure check-up were also the one that do take their medicine as prescribed by the health workers.

Table 5:- Patients adherence to medication

Variables	Frequency (n)	Percentage (%)
Do you usually skip clinic appointments		
Yes	163	44.1
No	207	55.9
Skipped last 2 consecutive appointments	108	29.2
Reason for skipping (n=108)		
Forgetfulness	101	93.5
Lack of finance	97	89.8
Due to office work	79	73.1
Travelling	58	53.7
Stress from work	51	47.2
Always too busy	33	30.6
Felt like symptoms were under control	45	41.7
Ever feel hassled about sticking to your treatment		
Yes	206	55.7
No	164	44.3
Are you aware about complication of hypertension		
Yes	291	78.6
No	79	21.4

*If yes, what are they (n=291)		
Unable to walk	93	31.9
Diabetes	134	46.1
Stroke	227	78.0
Heart disease	98	33.7
Sudden death	67	23.0
Cardio-vascular disease	44	15.1
Having blood pressure measured regularly		
Regular	298	80.5
Irregular	72	19.5
Taking your medicine combination exactly as prescribed		
Yes	297	80.3
No	73	19.7
*If yes, why (n=297)		
To avoid complication	234	78.8
Enhance quick recovery	153	51.5
To regulate my blood pressure	113	38.0
Healthy prescription	71	23.9
To avoid sudden death	67	22.6
*If no, why (n=73)		
Due to side effect of the medication	19	26.0
Feeling inconvenient	31	42.5
Constant Forgetfulness	48	65.8
Lack of finance to purchase all the drugs	52	71.2
Drugs were too many	13	17.8

***Multiple responses**

Table 6 demonstrates the relationship between socio-demographic characteristics and adherence to nutrition. It shows that there is significant relationship between age, sex, marital status, occupation, place of living, monthly income and religion in association with adherence to nutrition as there (P-value < 0.05) while the educational status and source of income were not statistically significant with (P-value >0.05).

Table 6:- Association between socio-demographic characteristics and adherence to nutrition

	Do you abide with the nutrition		X^2	df	p-value
Socio-demographic variables	**Good**	**Poor**			
Age (year)					
≤20	4(80.0)	1(20.0)			
21-30	12(75.0)	4(25.0)			
31-40	39(81.3)	9(18.8)	22.944	5	*0.006
41-50	39(79.6)	10(20.4)			
51-60	67(69.1)	30(30.9)			
>60	143(92.3)	12(7.7)			
Sex					
Male	220(86.3)	35(13.7)	9.467	1	*0.002
Female	84(73.0)	31(27.0)			
Marital status					
Single	18(64.3)	10(35.7)			
Married	234(86.0)	38(14.0)	12.231	3	*0.007
Divorced	15(78.9)	4(21.1)			
widowed	37(72.5)	14(27.5)			
Educational status					
No formal education	138(79.8)	35(20.2)			
Literate	51(82.3)	11(17.7)			
Primary	32(88.9)	4(11.1)	2.809	4	0.590
Secondary	31(79.5)	8(20.5)			

Tertiary	52(86.7)	8(13.3)			
Occupation					
Unemployed	21(65.6)	11(34.4)			
Civil servant	66(80.5)	16(19.5)	10.024	4	*0.040
Retiree	14(77.8)	4(22.2)			
Traders	148(87.6)	21(12.4)			
Self employed	55(79.7)	14(20.3)			
Place of living					
Urban	267(87.8)	37(12.2)	37.341	1	*<0.001
Rural	37(56.1)	29(43.9)			
Source of income					
Monthly salary	97(80.2)	24(19.8)	0.957	2	0.620
Pension	39(86.7)	6(13.3)			
Daily paid	168(82.4)	36(17.6)			
Monthly income					
10000-300001	172(83.5)	34(16.5)			
31000-60000	85(84.2)	16(15.8)	8.163	3	*0.043
61000-80000	11(57.9)	8(42.1)			
81000 and above	36(81.8)	8(18.2)			
Religion					
Christian	94(76.4)	29(23.6)	6.288	2	*0.048
Muslim	204(85.7)	34(14.3)			
Free thinker	6(66.7)	3(33.3)			

***Statistically significant <0.05**

Table 7 shows the relationship between socio-demographic characteristics and adherence to medications. It reveals that the age, marital status, educational status, occupation and place of living were statistically significant ($p < 0.05$) while the variables sex, monthly income and religion were not statistically significant ($p > 0.05$).

Table 7:- Association between socio-demographic characteristics and adherence to medications

	Taking medicine as prescribed		X^2	df	p-value
Socio-demographic variables	**Yes**	**No**			
Age (year)					
21-30	11(12.8)	10 (76.3)			
31-40	43(89.6)	5(10.4)			
41-50	42(85.7)	7(14.3)	30.741	5	*<0.001
51-60	66(68.0)	31(32.0)			
>60	135(87.1)	20(12.9)			
Sex					
Male	210(82.4)	45(17.6)	2.247	1	0.088
Female	87(75.7)	28(24.3)			
Marital status					
Single	17(60.7)	11(39.3)			
Married	227(83.5)	45(16.5)	9.594	3	*0.022
Divorced	15(78.9)	4(21.1)			
widowed	38(74.5)	13(25.5)			
Educational status					
No formal education	124(71.7)	49(28.3)			
Literate	52(83.9)	10(16.1)	18.165	4	*0.001
Primary	35(97.2)	1(2.8)			
Secondary	35(89.7)	4(10.3)			
Tertiary	51(85.0)	9(15.0)			
Occupation					
Unemployed	20(62.5)	12(37.5)			
Civil servant	75(91.5)	7(8.5)	15.570	4	*0.004

Retiree Traders Self employed	13(72.2) 138(81.7) 51(73.9)	5(27.8) 31(18.3) 18(26.1)			
Place of living Urban Rural	256(84.2) 41(62.1)	48(15.8) 25(37.9)	16.707	1	*<0.001
Monthly income 10000-300001 31000-60000 61000-80000 81000 and above	160(77.7) 82(81.2) 16(84.2) 39(88.6)	46(22.3) 19(18.8) 3(15.8) 5(11.4)	3.064	3	0.382
Religion Christian Muslim Free thinker	101(82.1) 190(79.8) 6(66.7)	22(17.9) 48(20.2) 3(33.3)	1.344	2	0.511

Table 8 reveals the relationship between social habit and adherence to medication as well as nutritional advice. It reveals that only the use of herbal medicine is statistically significant (p-0.038) while smoking and taking of alcohol were not statistically significant (p >0.05).

Table 8:- Association between social habit and adherence to medication

Social habit variables	Taking medication as prescribed		X^2	df	p-value
	Yes (297)	**No (73)**			
Do you smoke Yes No	49(76.6) 248(81.0)	15(23.4) 58(19.0)	0.672	1	0.255
Do you consume alcohol Yes No	49(84.5) 248(79.5)	9(15.5) 64(20.5)	0.771	1	0.247
Do you use herbal medicine Yes No	58(72.5) 239(82.4)	22(27.5) 51(17.6)	3.891	1	*0.038
Social habit variables	**Abiding with the nutritional advice**				
	Yes (304)	**No (66)**			
Do you smoke Yes No	49(76.6) 255(83.3)	15(23.4) 51(16.7)	1.656	1	0.135
Do you consume alcohol Yes No	46(79.3) 258(82.7)	12(20.7) 54(17.3)	0.382	1	0.325
Do you use herbal medicine Yes No	60(75.0) 244(84.1)	20(25.0) 46(15.9)	3.572	1	*0.045

Discussion:-

Hypertension is an abnormal state of circulatory function which in the long term, can lead to organ damage and several morbidity. It is accepted that individual pressure levels are influenced by genetics and non-genetics factors. The important of non genetic factors are: Diet e.g. level of sodium, Alcohol consumption, Lack of physical exercise, Physiological, Social economy and Behavioural factors.

Mean age in this study was 56.34±14.34 years, it was found that 41.9% of patients were aged >60. Although this result is consistent with Ojofeitimi et al (41 – 45.1%) Mallen et al (39%) and Mende-chacou et al (Male 68.9, Female 31.1%). It is at variance with that of Bakoglu and Yetkin (29.1%). In this study, 68.9% were male, while 31.1% were female. Although Hacialioglu et al (50.3%), Unsar and Yungen (67%) Lahdeupera et al (59.4%), Osamor and Owumi (65.2%) reported hither rates of hypertension in females. After menopause, women tend to

have higher levels of BP than men of similar age. After the age of 50, hypertension is more prevalent in women, though the reason for that is not clear (Black J. M., Matassarin – Jacoms E., Luckman and Sorsen's).

It was found that 65.6% of patients had been suffering from hypertension for 1 year and 2 – 5 years, similarly, figures for patients suffering from hypertension for 1 year and 2 – 5 years were reported by Bakoglu and Yetkin (51.3%) Leung et al. This frequent result of 12 year and 2 – 5 years may be associated with the fact that hypertension is an asymptomatic disease. In the relatively poor province of Erzincan, Turkey, the limited utilization of health services and lack of health screening might account for hypertension remaining undiagnosed for a long time. By providing hypertension awareness programme, Nurses can alert people about relevant risk factors for hypertension and direct than to appropriate prevention and management options.

The level of patient adherence to nutritional counseling, it reveals that majority 295 (79.7%) claimed that they know hypertensive patients have a special diet while 75 (20.3%) were not aware. Considerable proportion 131 (35.4%) mentioned low salt intake, 74 (20.2%) mentioned low cholesterol food, 43 (11.6%) mentioned fruit while 31 (8.4%) mentioned low sugar intake as the hypertensive patients diet. Many 107 (28.9%) of the studied patients stated that they were told to be taking low salty food and cholesterol, 67 (81.1%) were told to be taking low salt.

Studies conducted over the years have demonstrated that high salt intake is directly associated with high blood pressure (Karppamen & Mervala 2006).

A research conducted by Balogun et al (2006) revealed that popular Nigerian, Ghanaian and Caribbean meals had higher levels of salt (8.6 – 12g per portion). The study further revealed that high levels of salt were good both in meals from restaurants and homemade meals. This is due to the fact that most seasonings, as cubes used for preparing meals at home had about 5.4g of salt per cube.

The prevalence of clinic appointment non-adherence (taken as missing 2 consecutive clinic appointment) in this study was 29.2% even though as many as 55.9% has missed appointment at one time or another. Reasons given for non-adherence are similar to previous studies in Nigeria and other countries as well (Alhamad Z et al 2013, Berg MB et al 2005 and Akhigbe SI et al 2014). Medication adherence prevalence in our study was found to be 80.3% similar to findings of Akintunde (Akintude A et al 2015) but much higher than findings by Boima where adherence was found only in 34% of the hypertensive patients (Boima V et al 2015). This could have been due to different method used in measuring Medication Non Adherence in which Boima and Akintunde used an 8 parameter scale (Morisky) while our study was on self-reported sticking to prescription. A study reported that medication adherence was higher in the specialized clinic than the General outpatient clinic and this was attributed to more time of health talk and counselling.(Akintunde A et al 2015)

The relationship between age and adherence to nutrition has been documented by previous studies and sex, occupation, marital status, income and religion has been recognized as a very important determinant of adherence to nutrition (Gaur et al, 2008; Nwachukwu & Obasi, 2008; Shah, Pradhan, Reddy & Joseph, 2006). This may explain the significant association between these variables and adherence to nutritional counseling with the age group greater than 60years having abide with their nutrition and those that are married abide with the proper nutrition than singles in this study. There was also a significant relationship between respondents' income and adherence to proper nutrition with more earning 10000 to 30000 naira abide to the proper nutrition as compared to those earning more income.

Similar determinants of medication adherence as in most other studies were also found except that our study did not show that income is a statistically significant factor found in previous studies. (Akintunde A et al 2015 and Boima V et al 2015).

Conclusion and Recommendation:-

Based on the findings of this study there is need for launching a comprehensive approach involving health care providers, patients and the general public especially with the aim of educating patients on the need to abide with proper nutrition in the manner prescribed by the health practitioners. Health personnel should adhere to standards of providing adequate information through counselling as need be. However, majority of the respondents were aware of their disease state. Majority of the respondents were aware of special diet for hypertensive patients and the major factors affecting nutritional counseling are to avoid complication to control blood pressure and to keep fit and

healthy always. Those who did not adhere to nutritional counseling complained of financial constraint, national economic status. It is therefore necessary for health practitioners to intensify their health education and counselling of their hypertensive patients. The patient should know the importance of adherence with proper nutrition whether they have symptoms or not. They should take responsibility of their health and adhere to health instructions. Further studies on adherence by health insured patients should be carried out to negate the financial catastrophe that could have affected their adherence. Studies that may show importance of support group to improve adherence is necessary as in other chronic illnesses such as HIV and Tuberculosis.

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