



## MEDICATION ADHERENCE AND QUALITY OF LIFE OF HYPERTENSIVE PATIENTS IN CENTRAL HOSPITAL WARRI, DELTA STATE

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### ABSTRACT

Hypertension is a serious public health problem as a result of its high prevalence and therefore good control is often considered to be essential in reducing the morbidity and mortality of the disease. Adherence to antihypertensive therapy can have a positive effect on high blood pressure control and hence the health-related quality of life of hypertensive patients. The objectives of this study were to determine the level of adherence of hypertensive patients to antihypertensive therapy to ascertain the impact of adverse drug reactions (ADR's) on their adherence as well as to determine the impact of adherence on the quality of life of hypertensive patients. A prospective survey of the medication use of 300 hypertensive patients was undertaken in the medical outpatient department of Central hospital, Warri, Delta state. The study revealed that 59% of the respondents were adherent to their anti-hypertensive medication. The major reason for non-adherence was forgetfulness by the respondents to take their antihypertensive medications. About 11.7% of the respondents were also non-adherent as a result of Adverse Drug reactions (ADR's). The level of adherence had no significant impact on the quality of life of respondents. In the study, 59% of the patients were adherent to their antihypertensive medication. Adverse drug reactions had a significant impact on the level of adherence among hypertensive patients. The patients' level of adherence had no significant impact on their quality of life.

**KEYWORDS:** *Hypertension, Adherence, Quality of Life, Adverse Drug Reaction*

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### INTRODUCTION

Hypertension is an outstanding and important risk factor for cardiovascular disease (1). Despite improvements in the detection and treatment of hypertension since the 1970s, recent survey results have revealed that the condition continues to contribute, significantly, to mortality and morbidity in adults and this is because hypertension is poorly controlled in clinical practice (2). Similarly other studies suggest that the treatment's efficacy, in patients under care, is attenuated mainly by patient adherence to medication and lifestyle modification (3). It has been reported that only about 60% of patients take their medications as prescribed (4).

According to the seventh report of the Joint National Committee (JNC 7) on prevention, detection, evaluation and treatment of high blood pressure, hypertension is defined as a systolic BP level of  $\geq 140$ mmHg and diastolic BP of  $\geq 90$ mmHg. The JNC 7 defines normal BP as a systolic BP  $< 120$ mmHg and diastolic BP  $< 80$ mmHg (5). Hypertension is defined as a repeatedly elevated blood pressure exceeding 140 over 90 mmHg -- a systolic pressure above 140mmHg or a diastolic pressure above 90mmHg (6).

In consideration of the broad scope of the problem, increasing attention has been devoted to identifying factors which contribute to adherence (7).

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Adherence describes the degree to which a patient correctly follows medical advice. Most commonly, it refers to medication or drug adherence, but it can also apply to other situations such as medical device use, self-care, self-directed exercises, or therapy sessions. Both the patient and the health-care provider affect adherence, and a positive physician-patient relationship is the most important factor in improving adherence, although the high cost of prescribed medications also plays a significant role in adherence. Patients' knowledge of hypertension and its complications, cost of therapy, adverse effects from drugs, patients' beliefs and drug taking behavior are important factors in achieving better adherence to medications. A study by a group of researchers on the profile and predictors of health-related quality of life among hypertensive patients in South-Western Nigeria showed that the overall health-related quality of life was significantly better in the group of hypertensive patients with controlled blood pressure. They also noted increasing blood pressure and symptom count, the presence of stroke and visual impairment were significant negative predictors of the overall health-related quality of life (8).

The objectives of this study were to determine the level of adherence of hypertensive patients and to ascertain the impact of adverse drugs reactions (ADR's) on their level of adherence as well as the impact of the level of adherence on the quality of life of hypertensive patients.

## **METHODS**

### **Study Design**

This was a descriptive prospective survey of adult hypertensive patients attending the Medical Out-Patient Department of Central Hospital Warri over a period of six months.

### **Setting**

This study was undertaken at the Medical Outpatient Department of Central Hospital Warri. It is a secondary health institution located in Warri, Delta state. The hospital comprises both out-patients and in-patients departments with over 250 bed spaces. There are different wards within the hospital and they consist of both male and female medical wards, male and female surgical wards, accident and emergency wards, obstetrics and gynecology ward, pediatric ward, etc. About 700 to 800 patients visit the hospital daily. There is also a

pharmacy department within the hospital. It is a teaching facility for medical students, pharmacy interns, house officers and medical laboratory scientists.

### **Case Selection**

#### **Inclusion Criteria**

Patients who were 18 years and above, diagnosed of hypertension and were currently been treated with anti-hypertensive medications were included in the study.

#### **Exclusion Criteria**

Patients who were too ill to participate in the study and patients who refused to take part in the study were excluded.

#### **Sampling**

The sample size of 300 was obtained using an appropriate statistical formula for estimating sample size in health studies and at a prevalence rate of 19% as found in a study on the profile of Nigerians with hypertension (9). Patients that met the inclusion criteria were consecutively recruited until the sample size was obtained.

#### **Tool for Data Collection and Technique**

Data collection was done using the Morisky 8 item questionnaire and the SF-12 questionnaire. The questionnaire had different sections. The first section comprised the patient's demographics while the second section (Morisky 8-item questionnaire) was used to assess the patient's level of adherence. The third section (SF-12) was used to determine the physical component summary and mental component summary of the patient which consists of the physical functioning, role physical, general health, bodily pain, vitality, social functioning, role emotional and mental health of the patients.

#### **Ethical Approval**

Ethical approval was obtained from the ethics committee of Central Hospital Warri prior to the commencement of the study. Relevant guidelines for maintaining confidentiality of information was strictly adhered to.

## Data Management and Statistical Analysis

The data collected was coded and entered into the Statistical Package for Social Sciences data analysis software (SPSS for windows version 20.0). Categorical variables were presented as frequencies and percentages. The association between socio-demographic characteristics and adherence were explored using the Chi-square test. Logistic regression was used to assess the factors that influence medication adherence and also to determine the impact of the level of adherence on quality of life of hypertensive patients.

## RESULTS

### Socio-Demographic Characteristics of Respondents

Of the 300 respondents in this study, majority 75% were females. More than half of the respondents (59.4%) surveyed were above 50 years. The other respondents were between 18 and 50 years. Majority of the respondents were married (54.7%) and the others were single at the time of the study. This is as shown in Table 1

**Table 1: Socio-Demographic Characteristics of Respondents**

Characteristic	Frequency	Percentage
<b>Age</b>		
25-34	11	3.7
35-44	33	11.0
45-54	78	26.0
55-64	110	36.7
65 and above	68	22.7
<b>Sex</b>		
Male	76	25.3
Female	224	74.7
<b>Marital Status</b>		
Single	16	5.3
Married	164	54.7
Divorced	7	2.3
Separated	24	8.0
Widowed	89	29.7
<b>Educational Status</b>		
None	65	21.7
Primary	96	32.0
Secondary	54	18.0
Tertiary	85	28.3
<b>Occupation</b>		
Self employed	172	57.3
Employed	65	21.7
Unemployed	34	11.3
Others	29	9.7
<b>Total</b>	<b>300</b>	<b>100.0</b>

**Table 2: Association between socio-demographic characteristics and Level of Adherence to Antihypertensive medications**

	Variable	Non-Adherent n(%)	Adherent n(%)	X <sup>2</sup> Value	df	p-value
Age	25-34	8(6.5)	3(1.7)	0.098	1	0.754
	35-44	14(11.4)	19(10.7)			
	45-54	43(35.0)	35(19.8)			
	55-64	37(30.1)	73(41.2)			
	65 and above	21(17.1)	47(26.6)			
Gender	Male	30(24.4)	46(26.0)	8.434	4	0.077
	Female	93(75.6)	131(74.0)			
Marital status	Single	7(5.7)	9(5.1)	32.008	3	0.000
	Married	67(54.5)	97(54.8)			
	Divorced	2(1.6)	5(2.8)			
	Separated	16(13.0)	8(4.5)			
	Widowed	31(25.2)	58(32.8)			
Educational Qualification	None	23(18.7)	42(23.7)	123(100.0)	177(100.0)	
	Primary	31(25.2)	65(36.7)			
	Secondary	13(10.6)	41(23.2)			
	Tertiary	56(45.5)	29(16.4)			
	Total	123(100.0)	177(100.0)			

### Level of Adherence

Only 177(59%) of the respondents were adherent to their antihypertensive medications. The factors found to be significantly associated with adherence on the chi<sup>2</sup> test were the age of the patient (X<sup>2</sup>=16.385, P=0.003) and the patient's educational qualification (X<sup>2</sup>=32.008, P=0.000). Gender and marital status of the patient were not significantly associated with adherence.

### Factors Associated With Non-Adherence to Antihypertensive Medication

The respondents adduced various reasons for not adhering to their drug therapy, chief of which is forgetfulness 47 (30.5%), followed by feeling better 30 (19.5) and not able to afford medications 20 (13%). Only

18 (11.7%) were not adherent due to adverse drug reactions. Only one patient attributed their non-adherence to the use of alternative medicines. Other reasons are as shown in Table 4.

### Logistic Regression of Factors that Influence Medication Adherence

When the factors were fitted into logistic regression for multivariate analysis, all the factors were significant excluding affordability, lack of food and the patients feeling better which were not significantly associated with adherence to antihypertensive medication. This is as shown in Table 5.

### Quality of Life of Hypertensive Patients

Figure 1 represents the respondents' score in all the 8 domains that make up the physical and mental component summary scores.

## The Impact of the Level of Adherence on the Quality of Life of Hypertensive Patients

summary as well as their individual components. This is as shown in the tables below.

The patients' level of adherence had no significant impact on the physical and mental component

**Table 3: Factors associated with Non-Adherence of Patients to Antihypertensive Medications**

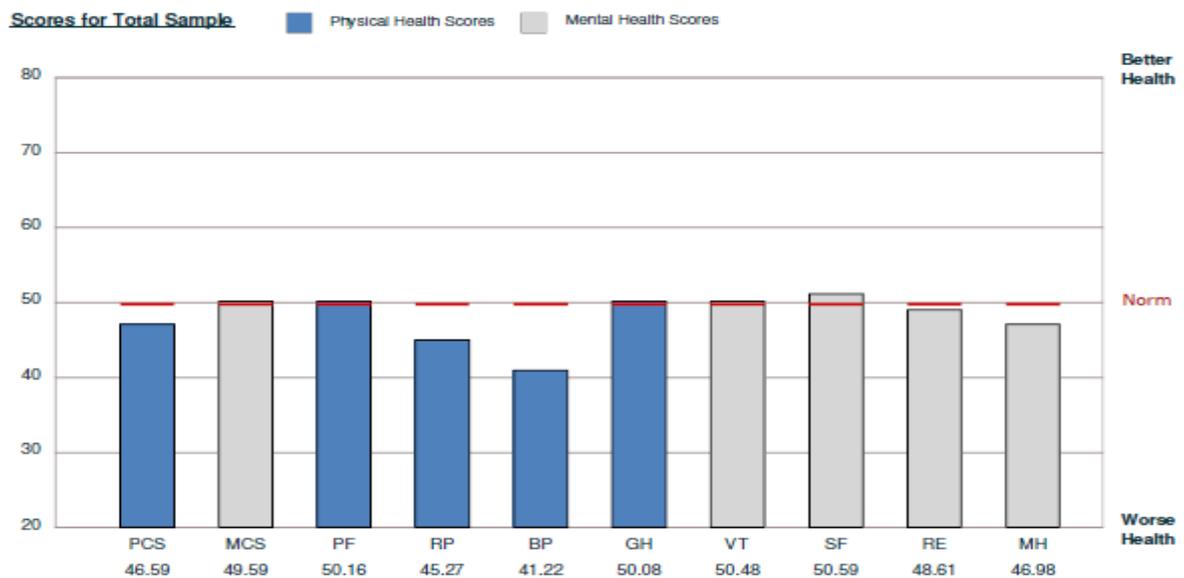
Reasons	Frequency	Percentage (%)
Affordability	20	13.0
Forgetfulness	47	30.5
Tiredness	17	11.0
Lack of Food	4	2.6
Using Alternative Medication	1	0.6
Feeling Better	30	19.5
ADR (Side Effect)	18	11.7
Religious Belief	12	7.8
Others	5	3.2
<b>Total</b>	<b>154</b>	<b>100.0</b>

**Table 4: Logistic Regression of the Factors That Influence Medication Adherence Among Hypertensive Patients**

	Factor(s)	P-Value	Sig.	Odd Ratio %	95% Confident Interval	
					Lower	Upper
Adverse Drug Reaction	20	<b>P&lt;0.05</b>	.000	12.04	7.379	83.950
Affordability	47	<b>P&gt;0.05</b>	.765	0.4	.169	3.693
Forgetfulness	17	<b>P&lt;0.05</b>	.000	12.73	11.187	61.881
Tiredness	4	<b>P&lt;0.05</b>	.000	16.05	8.681	126.863
Lack of food	1	<b>P&gt;0.05</b>	.999	0	.000	.
Others factors	30	<b>P&lt;0.05</b>	.000	58.48	15.159	964.038
Feeling better	18	<b>P&gt;0.05</b>	.558	0.3	.171	2.593

**Table 5: Logistic Regression on the Impact of the level of Adherence on quality of life of Hypertensive Patients**

		Wald (Power)	P-Value	Sig.	Odd Ratio %	95% Confident Interval	
						Lower	Upper
Constant							
PCS		2.009	P>0.05	.156	49.35	.952	1.008
MCS		.142	P>0.05	.706	50.66	.980	1.030



**Abbreviation**  
 PCS = Physical Component Summary  
 MCS = Mental Component Summary  
 PF = Physical Functioning  
 RP = Role Physical  
 GH = General Health  
 BP = Bodily Pain  
 VT = Vitality  
 SF = Social Functioning  
 RE = Role Emotional  
 MH = Mental Health

**Figure 1: SF Comparison for Total Sample**

**The Impact of the Level of Adherence on the Quality of Life of Hypertensive Patients**

The patients' level of adherence had no significant impact on the physical and mental component summary as well as their individual components. This is as shown in the tables below.

**Gender Distribution of SF-Domain Scores**

The mean scores of all eight domains of quality of life were analyzed and there was no significant difference in the quality of life between male and female hypertensive patients.

**DISCUSSION**

This study reported that a higher number of females were encountered over the study period. Some researchers have stated that this is likely because males do not regularly keep to clinic appointments or is a reflection of poor awareness of BP status among males than females (10). Majority of the respondents were in the age range of 45 years and above. This finding is in line with the finding of Alebiosu in Nigeria that increase in age is a risk factor for hypertension. It has also been reported that blood pressure occurs progressively with increase in age (11).

A good number of the respondents were adherent to their antihypertensive medications. This is consistent with that reported in studies carried out in other parts of Nigeria where majority of the respondents were adherent to their medications. Studies in places like Jos showed adherence level of (67.6%) (12), Lagos (65.8%) (13), Sagamu (78.7%), (14), Nsukka (70.7%) (15). A high adherence level has also been found outside Nigeria, a study in the United Kingdom reported an adherence level of 74.1% (16).

Forgetfulness was the major reason for non-adherence. A study noted that patients often forget to take their medication even when they are on a once daily regimen (9). Since forgetfulness is a widely reported cause of non-adherence to

medications, therefore, Pharmacists should endeavor at all times to write instructions on the use of medications for patients. Written instructions are better than oral instructions for reminding patients on medication use. In developed countries, electronic monitoring devices have been developed to remind the patient of their pills and treatment therapy (9). For patients with busy schedule, Pharmacists should make suggestions that incorporate multiple daily doses into the patient's routine, like setting reminders on their mobile phones. For elderly patients, pharmacists should emphasize to their care givers to serve as a source of reminders for the patients to enable them take their medications accordingly.

**Table 6: Logistic Regression on the Impact of the level of Adherence on quality of life of Hypertensive Patients (Physical Component Summary)**

		Wald	P-Value	Sig.	Odd Ratio %	95% Confident Interval	
						Lower	Upper
	Constant						
	PF	.384	P>0.05	.535	25.12	.993	1.013
	RP	.941	P>0.05	.332	24.89	.983	1.006
	BP	.226	P>0.05	.635	24.97	.986	1.008
	GH	.018	P>0.05	.895	25.02	.987	1.011

**Table 7: Logistic Regression on the Impact of the level of Adherence on quality of life of Hypertensive Patients (Mental Component Summary)**

		P-Value	Sig.	Odd Ratio %	95% Confident Interval	
					Lower	Upper
<b>Constant</b>						
	VT	P>0.05	.500	24.47	.983	1.009
	SF	P>0.05	.096	24.79	.982	1.001
	RE	P>0.05	.108	25.24	.998	1.021
	MH	P>0.05	.706	25.07	.990	1.016

**Table 8: Gender distribution of SF-Domain scores**

Component	Sex of Patients						T- Test
	Male		Female		Total		P-Value
	Mean	SD	Mean	SD	Mean	SD	
<b>PF</b>	77.91	29.11	78.13	28.24	78.07	28.41	0.955
<b>RP</b>	64.64	26.25	63.77	24.54	63.99	24.94	0.794
<b>BP</b>	58.88	26.68	52.68	26.55	54.25	26.67	0.080
<b>GH</b>	66.78	24.76	65.56	21.75	65.87	22.52	0.684
<b>VT</b>	53.62	25.40	53.57	21.66	53.58	22.62	0.988
<b>SF</b>	87.17	26.61	80.58	28.55	82.25	28.18	0.078
<b>RE</b>	83.55	23.65	80.86	25.00	81.54	24.65	0.411
<b>MH</b>	64.55	22.70	61.73	21.75	62.45	21.99	0.335
<b>PCS</b>	46.88	8.49	46.49	7.92	46.59	8.05	0.717
<b>MCS</b>	50.72	9.45	49.21	9.20	49.59	9.27	0.223

Another reason why some patients did not adhere to their anti-hypertensive medication was because they felt better. Pharmacists and physicians should counsel the patients on the dangers associated with stopping their medications abruptly. There is need for healthcare professionals to continually educate patients that the treatment of hypertension is long term and for life and also the need for them to adhere to their therapy.

Since one of the reasons for non-adherence in this study is affordability, the doctors should consider the financial status of the patients before prescribing antihypertensive medication and also generic prescribing should be encouraged.

Furthermore, some patients also attributed their non-adherence to side effects of the medications. Adverse Drug reaction (side effects) had a significant impact on the level of adherence among hypertensive patients. There is need for the

Pharmacists to counsel patients on common side effects that may be encountered during the course of treatment, also how to avoid them and what to do when they occur. There was no significant association between gender, marital status and level of adherence and this was in contrast to the findings in Borno state by some researchers (17).

On the basis of the educational qualification of the patients, there was a significant association between educational qualification and adherence to antihypertensive medications. During the study, uneducated patients or those with lower level of education were noticed to have more trust in physician's advice than the educated patients. For these reasons, patient education is very important to enhance adherence. Counseling patients on the use of medications is very useful in improving patient's adherence to medication. Healthcare providers (Pharmacists, and Medical Doctors)

should give patients adequate education about their treatment and disease.

There was a significant association between the age of the patient and their level of adherence and this is in consonance with the findings reported in Borno state (17). Identifying factors that determine adherence of hypertensive patients to treatment is, therefore, of vital importance in applying therapeutic strategy and in obtaining satisfactory results in patient therapy (9).

In this survey, the level of adherence had no significant impact on the physical component summary and also the mental component summary, both of which make up the quality of life of the patients. This finding is similar to that of study by a group of researchers in Pakistan (18), and in line with the recognition that Health Related Quality of Life (HRQoL) is affected by a number of factors and is not limited to medication adherence only (18). Another reason may be linked to the frequency and class of antihypertensive medications used by the respondents. Different antihypertensive agents affect Health Related Quality of Life (HRQoL) in different ways. Even medications from the same pharmacological class, with the same efficacy and safety profile, show different impact on the Health Related Quality of Life (18). The duration of the disease also plays an important role as patients who are recently diagnosed with hypertension may experience an increased HRQoL for the first few months of therapy. However for chronic hypertensive patients, medication might not improve their quality of life. Although HRQoL in chronic patients can be observed as maintained but this preservation is never taken as improved quality of life by the patients (18). However, it is worthy of note that both adherence to treatment and HRQoL are affected by a multiplicity of factors. There was no gender difference in the mean scores of all eight domains of quality of life in this study group showing that quality of life of both male and female hypertensive patients was close and these finding is different from the observation of a study in Pakistan (19).

## CONCLUSION

In this study, a good number of the respondents were adherent to their anti-hypertensive medications. Forgetfulness and the patients' feeling better were the major factors associated with non-adherence of patients to antihypertensive medications in this study.

Adverse Drug reaction had a significant impact on the level of adherence among hypertensive patients.

The level of adherence had no significant impact on the quality of life of hypertensive patients which may be because it is affected by several factors and not just medication adherence alone

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## DECLARATION OF CONFLICT OF INTEREST

The authors declare no conflict of interest.

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