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FACTORS INLUENCING THE LEVEL OF ADHERENCE TO TREATMENT PROTOCOLS AMONG HYPERTENSIVE OUT-PATIENTS IN FEDERAL MEDICAL CENTRE, OWO, ONDO STATE, NIGERIA

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Abstract

Hypertension is one of the leading causes of disabilities and deaths in both developed and developing countries. Proven and evidenced-based strategies are needed to implement interventions to control it effectively. Appropriate lifestyle changes often called non-pharmacological approaches that are overlooked many times are the cornerstones of its prevention and control. The study examined the factors that influenced adherence to treatment protocols among patients with hypertension at Federal Medical Centre, Owo, Ondo State, Nigeria. The study employed a descriptive cross-sectional research design. Purposive sampling technique was used to select a sample size of 129 from the target population. Questionnaires were used to collect data. The results were analyzed using descriptive and inferential statistics and they were presented in frequency tables and chart. The study revealed that less than half of the respondents 57(44.2%) had good level of knowledge while 30(23.3%) had poor knowledge level of hypertension and its treatment protocols. It was also revealed that expensive drugs, long duration of treatment regimen, forgetfulness of check-ups, beliefs and values, attitudes of doctors and nurses in the hospital, side effects of anti-hypertensive drugs and level of knowledge about the disease and its treatment protocols were important factors that influenced adherence to treatment regimens among respondents. The findings further revealed that there was significant relationship (p= 0.0021**)** between patients' level of education and level of adherence to treatment protocols. Adherence to treatment protocols among hypertensive patients was low in this study, hence, patients should be educated and given necessary supports to imbibe the recommended lifestyle modifications that can help them to control their blood pressures and live optimally.

Keywords: Factors, Adherence, Treatment Protocols, Hypertensive Out-patients

1.0 Introduction

Hypertension is a major risk factor for cardiovascular diseases which cause 7.5 million (12.8%) of all deaths, per year (Mouhtadi *et al*., 2018; Aynalem *et al.*, 2021). Its prevalence moved from being the fourth in rank among women and first amid men worldwide in 1990 and 2017 respectively (Gakidou *et al.*, 2017). In

2015, one in four men and one out of five women had hypertension with only a few people being able to control it while majority developed complications which later led to death and this made it a major cause of untimely deaths globally then (WHO, 2019). The silent killer is more prevalent in developed countries, but the severity is higher in developing countries because of major changes in lifestyles (Aynalem, *et al.*, 2021).

In Africa, people with hypertension have increased in number gradually from 54.6 million in 1990 to 92.3 million in 2000 (70% increase) and 130.2 million in 2010 (41% rise from what obtained in year 2000) and it is projected that the figure will increase to 216.8 million by the year 2030 which will be 66% rise from what obtained in year 2010 (Okello *et al*., 2020). In Nigeria, the prevalence of hypertension is about 38% and this varies across the geo-political zones as follows: North-West, 26.8%; North-East, 27.5%; North-Central, 20.9%; South-East, 52.8%; and South-West, 42.1% and South-South, 44.6% (Odili *et al*., 2020).

The diagnosis of hypertension (HTN) is made, when blood pressure is measured on two different occasions and the systolic blood pressures are ≥140 mmHg and/or the diastolic blood pressures come out to be ≥90 mmHg (Win *et al.,* 2021). Therefore, adherence to the prescribed healthy treatment protocols for effective control is key in the management of hypertension at all times by those who live with the disease (Aynalem, *et al*., 2021). Individuals' adherence behaviours are usually influenced by multiple factors (Liu *et al.,* 2020). Adherence to treatment protocols in hypertensive patients is referred to as patients' ability to adhere to antihypertensive drugs and other non-pharmacological measures like healthy diet, exercise and so on (Ali *et al*., 2019). Adherence which is also known as compliance to treatment regimens is very important for effective control of blood pressure, prevention of complications as well as helps in improving the quality of life amongst patients who live with the disease (Liu *et al*., 2020).

Numerous factors impact adherence with treatment protocols; they are grouped as follows; patient-related factors, social and economic factors, therapy-related factors, condition-related factors, health care team and system-related factors (WHO, 2016). Patient-related factors are associated with age, income, race and ethnicity. These patient-related factors are consistently related to adherence levels across all studies (Burnier and Egan, 2019; Soesanto *et al*., 2021). Social and economic factors are also closely related to the patients (Soesanto *et al.*, 2021).

Burnier (2017) reported that, patient-related factors are usually the major focus of attention when it comes to compliance with treatment protocols. One of the key patient-related factors that influence adherence to treatment protocols is knowledge about all treatment protocols of the condition. A lot of studies have established that adequate level of knowledge on any disease and its complications has a lot of benefits especially with regards to adherence to treatment protocols and reduction of associated complications (Abiodun, *et al.,* 2020). The higher a patient's level of knowledge on hypertension itself and treatment protocols, the higher the level of awareness and eagerness to seek treatment and engage in self-management of such patient (Soesanto *et al.*, 2021).

Therapy-related factors are accessibility to pharmacy shops for procurement of medications, the complexity of the therapy, effects of medications (therapeutic and side-effects), availability of medical support to deal with side effects, dosing and so on. Condition-related factors are; level of disability (physical, social and psychological), severity of the disease, rate of disease progression and so on (Burnier, 2017; Burnier and Egan, 2019). The quality of relationships between clinicians and their patients, how the clinicians communicate, types of decisions made by clinicians about their patients as well as participation of patients themselves in decisions that are critical to their

wellbeing are important (Burnier, 2017). Overwork and burn out among clinicians can negatively affect adherence to treatment regimens too (Lauffenburger *et al*., 2017).

The broad objective of the study was to identify the factors that influenced adherence to treatment protocols of hypertension among patients with hypertension who were attending out-patients (cardiology) clinic at Federal Medical Centre, Owo, Ondo State, Nigeria.

2.0 Methods and Procedures

The study employed a descriptive cross-sectional design and was carried out at Federal Medical Centre Owo, Ondo State, Nigeria. Federal Medical Centre, Owo is a tertiary public health care centre that is located in Owo, a city in Ondo State, Southwestern, Nigeria. The hospital was the formal General Hospital, Owo which was established in 1989 and owned by the Ondo State Government until it was taken over by the Federal Government of Nigeria and re-designated as Federal Medical Centre, Owo. The hospital was one of the five pioneer Federal Medical Centres established by the Federal Government of Nigeria in 1993 in line with the government policy to establish Federal Medical Centres in states without Federal Government owned Tertiary hospitals before then. The centre receives high number of emergency cases resulting from road accidents because of its proximity to the highway that links Abuja with Lagos.

FMC Owo, works with the mission of initiating and developing quality service delivery by putting in place necessary infrastructure to be able to deliver effective, efficient and affordable health care services to all patients/clients. This is sustained through an effective monitoring and evaluation mechanism. The vision is to provide qualitative, affordable and accessible health care services to all patients at the primary, secondary and tertiary levels with the ultimate goal of reducing morbidity and mortality among Nigerians.

The target population was patients attending cardiology clinic at the health facility during the study period. Respondents were between ages 18 and 80 years and have been diagnosed by consultant physicians at the centre of hypertension for at least 6 months before data collection began. They also spoke Yoruba, Hausa, Igbo or English languages fluently. They gave their consents to participate in the study before they were recruited for the study. However, severely ill patients and those who did not give their consents were excluded.

Cochran's formula was used to calculate the sample size and a total of 129 participants were involved in the study. A structured questionnaire was used to collect data and same was divided into the following sections;

Section A: This section had eight (8) items which were used to collect socio-demographic data of respondents.

Section B: This section contained ten (10) items which were used to collect data on knowledge of hypertension and its treatment protocols. The items had options 'a', 'b', 'c' and 'd'. Scores of 1 and 0 were given for each correct and incorrect answer respectively. The minimum score was 0 and the maximum score was 10. Good knowledge = 8-10; Fair knowledge = 5-7; and Poor knowledge = 0-4.

Section C: This section had items on the level of adherence to treatment protocols of hypertension. It contained 12 items on a 4-point Likert scale that ranged from daily, frequently, rarely to never. Scores of 3 was awarded to daily, 2 to frequently, 1 to rarely and 0 was given to never. Meanwhile, reversed scoring was done for negative compliance items. The highest obtainable score was 36 while zero (0) was the lowest possible score. Good compliance = 24-36; Fair compliance = 12-23 and Poor compliance = 0-11.

Section D: This section contained items on factors influencing adherence to treatment protocols of hypertension. It had 9 items with options 'yes' or 'no'.

The validity of the questionnaire was established through face and content validity criteria. Each item was examined for clarity, appropriateness,

scope, and relevance to the study. The reliability of the instrument was established by internal consistency method by experts and the reliability coefficient was determined. Ethical clearance with approval number FMC/OW/380/VOL.CXXXIX/109 was obtained by the researchers from the Ethics and Research Committee of Federal Medical Centre, Owo. The researchers met with those in charge of the cardiology clinic to explain the purpose of the study. Sensitization was done by taking time to explain all the details to make all the respondents fully aware of the study and its objectives beforehand so as to reduce resistance and hostility towards the investigators. Informed consent was obtained as well from all the respondents before data collection commenced and they were assured that their data will be confidentially kept. They were also told that they were free to discontinue their participation in the study at any given time without fear of facing any repercussion.

Administration of questionnaires was done one by one, it took 22 to 26 minutes to administer each one and they were retrieved immediately. Data were analyzed with the aid of IBM Statistical Package for Social Science (SPSS) version 28 using both descriptive and inferential statistical techniques. The socio-demographic data which were mainly nominal and ordinal were analyzed with descriptive statistics such as frequency, percentages and mean score. The hypothesis that was generated for the study was analyzed with Chi Square.

3.0 Results

Table 1 below shows the socio demographic characteristics of the respondents. The mean age of the respondents was 52.5 (SD= 9.9) years. Majority 72(55.8%) of the respondents were over 50 years and more than half 74 (57.4%) were females. About two-thirds 82 (63.6%) were Christians, and majority 116 (89.9%) were married. Only one-third 44 (34.1%) completed tertiary education, while majority 98(76%) were from the Yoruba ethnic group.

Table 1: Socio-Demographic Characteristics of the respondents (n= 129)

Variables	Option	Frequency	Percentage (%)
Age (in years) Mean Age ± SD (years) = 52.5±9.9	19–40	11	8.5
	41–50	46	35.7
	51 and above	72	55.8
Gender	Male	55	42.6
	Female	74	57.4
Marital Status	Single	2	1.6
	Married	116	89.9
	Divorced	3	2.3
	Widowed	8	6.2
Religion	Christian	82	63.6
	Islam	44	34.1
	Traditional	3	2.3
Ethnicity	Yoruba	98	76
	Ibo	18	14
	Hausa	-	-
	Others	13	10
Educational Status	Primary	31	24
	Secondary	54	41.9
	Tertiary	44	34.1
Occupational Status	Civil servant	31	24
	Self-employed	91	70.6
	Unemployed	7	5.4
Monthly Income	below ₦10,000	4	3.1
	₦10,000-30,000	19	14.7
	₦31,000-50000	48	37.2
	above ₦50,000	58	45
Total		**129**	**100**

Furthermore, majority of the respondents 91(70.6%) were self-employed. Only 4(3.1%) of

the respondents earned less than ₦10,000 while a few 19 (14.7%) earned a monthly income of between ₦10,000 - ₦30,000 and just one-third 48(37.2%) earned between ₦31,000 - ₦50,000 monthly while almost half 58 (45%) of the respondents earned a monthly income of above ₦50,000:00.

Table 2: Level of Knowledge on Hypertension and Treatment Protocols of the Respondents

Level of Knowledge	Frequency	Percentage (%)
Poor Knowledge	30	23.3
Fair Knowledge	42	32.6
Good Knowledge	57	44.2
Total	**129**	**100.0**

Table 2 above shows that a little above one-third of the respondents 57(44.2%) had good level of knowledge on hypertension and its treatment protocols while only 30(23.3%) of the respondents had poor level of knowledge on hypertension and its treatment protocols.

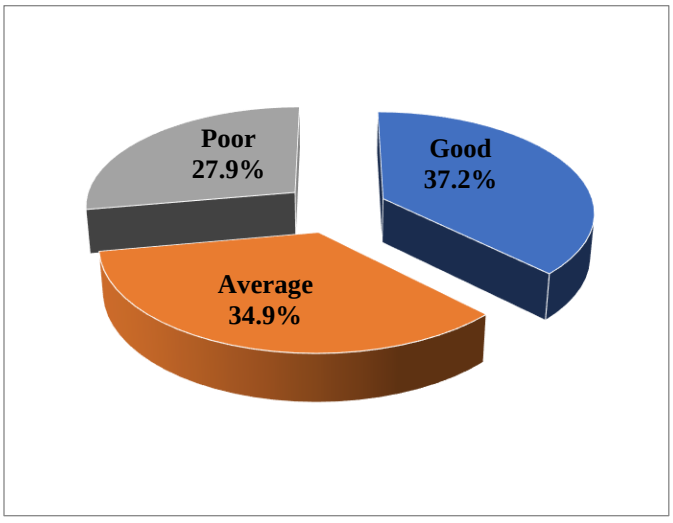

Figure 1: Level of Adherence to Treatment Protocol of the Respondents

The pie chart shows the level of adherence to treatment protocols among respondents. It can be deduced that 48 (37.2%) of the respondents had good level of adherence, 45(34.9%) had average level of adherence while 36(27.9%) had poor level of adherence to treatment protocols of hypertension.

Table 3: Factors Influencing Compliance to Treatment Protocol (n = 129)

Variables	Yes (%)	No (%)
Expensive Drugs	126 (97.7%)	3 (2.3%)
Long duration of treatment regimen	94 (72.9%)	35(27.1%)
Forgetfulness of check-ups	114 (88.4%)	15(11.6%)
Support from family members	79 (61.2%)	50(38.8%)
Beliefs and values	122 (94.6%)	7 (5.4%)
Attitudes of doctors and nurses in hospital	126 (97.7%)	3 (2.3%)
The side effects of the hypertensive drugs are unbearable	74 (57.4%)	55 (42.6%)
Level of knowledge about the disease and treatment protocols	102 (79.0%)	27 (21.0)

Table 3 above shows the factors that influenced adherence to treatment protocols among the respondents. Almost, all the respondents 126 (97.7%) reported expensive drugs as one of the factors, 94 (72.9%) stated that long duration of treatment regimen is a factor, 114 (88.4%) stated forgetfulness of check-ups, 79 (61.2%) 79 (61.2%) reported that support from family members, and 122 (94.6%) reported that beliefs and values influenced adherence to treatment protocols. Almost all, 126 (97.7%) reported that attitudes of doctors and nurses in the hospital influence adherence. More than half 74 (57.4%) stated that side effects of the hypertensive drugs and 102 (79.0%) opined that level of knowledge

about the disease and treatment protocols are important factors that influence adherence to treatment protocols from time to time.

Table 4: (Hypothesis) There is no Significant Difference between Patients' Level of Education and Level of Adherence to Treatment Protocols

	Level of Adherence				**Chi-square Test**		
Patients' Level of Education	Good (n=48)	Average (n = 45)	Low (n=36)	**Total (%)**	**X^2**	**P-value**	**d f**
Primary	12	11	8	31(24.0%)	**0.132**	**0.0021**	**4**
Secondary	20	19	15	54(48.9%)			
Tertiary	16	15	13	44(34.1%)			
Total (%)	**48**	**45**	**36**	**129(100%)**			

Table 4 above shows that the variables tested (patients' levels of education and levels of adherence to treatment protocols) were statistically significant at $p<0.05$, with a P-value of 0.0021. Therefore there was a significant difference between patients' levels of education and levels of adherence to treatment protocols. Hence, the hypothesis was not true and therefore rejected.

4.0 Discussion of Findings

Adherence to treatment regimen is very crucial, if hypertension would be successfully controlled to forestall its numerous complications that cause deaths (Osamor and Owumi, 2011; Soesanto *et al.,* 2021). The mean age of respondents was 52.5+9.9 years and this is similar to the findings of Wright *et al*. (2011), Ali *et al.* (2019), Aynalem *et al.* (2021) and Alsofyani *et al.* (2022). This supports the fact that advanced age is a risk factor for the development of hypertension. It was also revealed that more than half of the respondents were females. This is in agreement with the findings of Amira and Okubadejo (2007), Liu *et al.* (2020), Okello *et al*. (2020), Aynalem *et al.* (2021) and Alsofyani *et al*. (2022)

Furthermore, less than half of the respondents had tertiary education. This is in line with the findings of Amira and Okubadejo (2007) and Osamor and Owumi (2011) that were done in southwest, Nigeria. It is also in agreement with the findings of Liu *et al*. (2020) and Alsofyani *et al.* (2022) in two separate studies that were done in China and Taif, Saudi Arabia respectively, However, it is in contrast with what Mouhtadi *et al*. (2018) found out.in another study.

Majority of the respondents were of Yoruba ethnicity. This is undoubtedly related to the fact that Owo is an ancient town in Yoruba land. It is in agreement with the finding of (Osamor and Owumi, (2011) in a study that was done in southwest, Nigeria too. Majority of the respondents were also married. This is in agreement with the findings Aynalem, *et al*,

(2021); Dehghan and Nayeri (2021) and Alsofyani *et al;* (2022). The reason for this is because all the respondents are middle-aged adults.

The level of knowledge of patients with hypertension has a lot of impact on the level of adherence to treatment protocols and consequently outcomes. Alefan et al, (2019); Ali et al, (2019); Win *et al*., (2021) and Soesanto *et al*, (2021) opined that patients who have more knowledge can have a lot of positive influence on active management of hypertension because they are by far more effective in controlling their blood pressure than those who are not knowledgeable.

In this study, less than half (44.2%) of the respondents had a good level of knowledge on hypertension and its treatment protocols. This is in agreement with the study of Akoko *et al.,* (2016); Ehwarieme, *et al.*, (2018); Ali *et al*, (2019) and Soesanto *et al.,* (2021) but in contrast with the finding of Alefan *et al* (2019) in a cross sectional survey that was conducted in Jordan among hypertensive patients where more than two-thirds of the respondents had good level of knowledge on hypertension and adherence to the treatment protocols.

Adherence level greatly impacts treatment outcomes and the overall quality of life of patients with chronic diseases. It was found out that only 37.2% had good adherence to treatment protocols. This is in agreement with what some other researchers have found out, Amira and Okubadejo (2007), Ali *et al*. (2019), Ehwarieme, *et al.* (2018), Aynalem *et al.* (2021) and Soesanto *et al.* (2021) but in contrast with the finding of Osamor and Owumi, (2011) which showed that more than two-third of the study population had a good level of adherence in a community based study which was done at Idikan community, Ibadan, a city in southwestern, Nigeria. Again, Liu *et al,* (2020) found out a high level of adherence in a study that was conducted in China and Alsofyani *et al*. (2022) also reported on a study that was done at Taif Saudi Arabia that over four-fifth of their study population had a good level of adherence.

This variability of data is related among other things to the difference in measurement methods, health systems, study settings and some other factors. The level of adherence to prescriptions may vary from one country to another (Win, *et al.;* 2021). However, lack of good adherence to treatment protocols is very detrimental to achieving desirable patients' outcomes. Ashoorkhani *et al*. (2018) posited that as human beings are not the same in every area of life due to varying reasons like; environment, type of medication, genetic makeup, level of knowledge, duration of follow up and available resources to each person, so also the level of adherence to treatment protocols differs significantly among patients.

All actions or behaviours are influenced either by intrinsic or extrinsic factors especially in humans. Therefore, certain factors influence the level of adherence with treatment regimen among hypertensive patients (Dehghan and Nayeri, 2021). In this study, it was shown that almost all the respondents 126 (97.7%) reported expensive drugs as a key factor that influenced adherence to treatment protocols. This is in agreement with the study of Ali *et al*. (2019) and Dehghan and Nayeri (2021), however, it is in contrast with the finding of Alsofyani *et al.* (2022) where many of the respondents reported that high cost of medication was not a factor that influenced their levels of adherence.

Furthermore, long duration of treatment regimen which is most of the time life-long was also a major factor that a significant number 114 (88.4%) of the respondents reported. This is in agreement with the report of a systematic review on the subject matter (Win *et al.* 2021) and a few other studies (Al-Ramahi, 2015; Soesanto *et al*., 2021; Alsofyani *et al.*, 2022). Forgetfulness of check-ups, support from family members, attitudes of doctors and nurses in hospital, side effects of the hypertensive drugs were found out as core factors that influenced adherence to treatment protocols. The following studies agree with this finding Osamor and Owumi (2011); Al-

Ramahi *et al.* (2015); Soesanto *et al*., (2021); Win *et al.,* 2021; Dehghan and Nayeri (2021) and Alsofyani *et al*. (2022). Beliefs/values and level of knowledge about the disease and treatment protocols were important factors that influenced adherence to treatment protocols among the respondents as well. These findings are supported by the report of Boima (2015); Alefan *et al.* (2019); Ali *et al.* (2019); Soesanto *et al.* (2021) and Win *et al.* (2021).

The study revealed that there was a significant relationship (p=0.0021) between patients' level of education and level of adherence to treatment protocols. It means that the educational levels of patients with hypertension had influence on their levels of adherence to treatment protocols among the study population. This is in agreement with the study of Soesanto *et al*. (2021) and that of Aynalem, *et al.* (2021) where p=0.005. Improved education helps compliance with treatment regimens (Ali *et al.,* 2019; Abiodun *et al.,* 2020) but it does not give a surety on adherence to treatment regimen for some other reasons which may be relative among patients with hypertension.

4.0 Conclusion

It was found out that only 37.2% of the study population adhered to the prescribed treatment protocols of hypertension. Also, 44.2% of the respondents had good knowledge of hypertension and its treatment protocols and a lot of patient-related factors also influenced adherence negatively. Whereas, adherence to treatment protocols or regimen is very important in self-management of chronic diseases like hypertension because it is very essential for achieving control of blood pressure and sustaining it. It is also very essential in preventing complications which have adverse effects on the body.

It is therefore very important to equip patients with hypertension through adequate and regular health education with enough information on all that they need to know about their condition that will motivate them to constantly adhere to their prescribed treatment protocols. This will help them to achieve and sustain good blood pressure control so that complications can be prevented while living optimally. Regular follow-up visits are recommended for all patients with hypertension and all other chronic diseases. Healthcare providers have the responsibilities to educate and motivate patients as well as their significant others who are around them to offer supports from time to time in order to achieve desirable outcomes.

Limitations

This was a descriptive cross-sectional study. The findings of this study are based on a relatively small number of patients.

Conflicts of interest/Competing Interests

The authors have no relevant financial or non-financial interests to disclose

Authors' contributions

All the authors contributed to the research work up to this level.

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