

Original Research Article

The association between medication adherence and blood pressure control among hypertensive patients attending a tertiary hospital in south-south Nigeria

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ABSTRACT

Background: Hypertension is a common disease among adults. It is a global health condition that requires drugs and lifestyle changes for its management and control. Despite this, the rate of hypertension related deaths has been increasing in prevalence across the world. The purpose of this paper is to determine the association between medication adherence and blood pressure control among hypertensive patients in Family Medicine Clinic, University of Port Harcourt Teaching Hospital, Rivers State, Nigeria.

Methods: A hospital based cross-sectional study was conducted in Family Medicine Clinic, University of Port Harcourt Teaching Hospital. Systematic sampling method was used to select 400 participants. A structured questionnaire namely Morisky Medication Adherence Scale-4 was adapted and used for data collection in this study. Bivariate analysis was done using Chi square test and odd ratio.

Results: A total of 400 (118 males and 282 females) adult hypertensive patients participated in this study. Majority of the participants had poor adherence to medication treatment 71.2% (n=285), whereas the remaining ones 28.8% (n=115) had good adherence. Similarly, most of the participants, 77.2% (n=309) had poor blood pressure control while the remainder 22.8% (n=91) experienced the opposite. The bivariate analysis showed that good medication adherence was significantly associated with good blood pressure control.

Conclusions: Medication adherence was low especially among those with poor blood pressure control. This link was statistically significant therefore doctor-patient interaction with emphasis on medication adherence is advocated.

Keywords: Blood pressure control, Hypertension, Medication adherence

INTRODUCTION

Hypertension is one of the non-communicable diseases with dire cardiovascular morbidity and mortality, but more importantly, it is preventable and controllable.¹ Hypertension is the most frequently diagnosed disease worldwide and its complications account for 25% of all emergency medical admission and 60% of all hospital admissions in Nigeria.^{2,3} Low and middle income countries bear the greater burden of hypertension compared to high income countries.⁴ The current trend is the steady decrease of hypertension prevalence in high

income countries by 2.6% and an appreciable level of increased control by 10.5%.⁴ Contrastingly, the prevalence of hypertension in low and middle income countries increased by 7.7% with a further decrease in level of control from 8.4% to 7.7%.⁴

The poor blood pressure control rate is affected by the lack of motivation to take drugs every day, general beliefs concerning drugs, poor adherence to drugs and recommended advices.⁵ Also other factors associated with poor blood pressure control are adverse effects of the drugs, high cost and lack of funds to buy drugs.⁵

Hypertension is taken seriously because it is one of the most common causes of adult emergencies from cardiovascular disease in Nigeria with damaging effects on organs like brain, heart and kidney. This has accounted for a substantial proportion of unnecessary deaths in Nigerian hospitals.² The effects of hypertension impact negatively on the quality of family life of affected individuals and place great socio-economic burden on the individuals and families.

Adequate control of BP was reported to reduce the incidence of stroke by an average of 35-40%, myocardial infarction by 20-25% and heart failure by more than 50%.⁶ In Nigeria, BP control rates in adult patients range from 24.2% to 53.3% according to published studies.⁶⁻⁹ These disparities can be attributed to widespread personal and family poverty, ignorance and poverty of knowledge, all leading to poor medication adherence.⁷

Adherence is usually a prevalent issue in chronic diseases such as hypertension. Many existing evidence have shown that there is a correlation between medication adherence and BP control with conclusions that the former is the main cause for poor control of BP.⁸ A multicentre study involving populations from Nigeria and Ghana reported that the average medication adherence rate was 33.3% with the lowest rate in Port Harcourt and the highest in Ibadan, resulting in poor BP control in majority of the respondents.⁹ Similarly, another study showed that adherent patients were 1.20 times more likely to achieve BP control, compared with non-adherent patients.⁸ And that those with poor medication adherence were 1.43 times more likely to experience cardiovascular disease hospitalization and 1.47 times more likely to be hospitalized from other causes.⁸

Patients' adherence to antihypertensive medications is a central factor in achieving blood pressure control and reducing adverse cardiovascular outcomes.

Therefore, this study will determine the level of medication adherence among hypertensive patients attending the family out-patient clinic and its relationship to blood pressure control medicine. This knowledge will help create awareness among health-care workers on the need to monitor hypertensive patient to ensure they comply with their prescribed medication to guarantee good blood pressure control.

METHODS

Study area

The study was conducted at the Family Medicine Clinic of the University of Port Harcourt Teaching Hospital (UPTH), Port Harcourt which is a tertiary health care institution located in Port Harcourt city, Rivers state. The study population were hypertensive patients receiving care at the hospital mentioned above.

Those included were patients aged 18 to 65 years, who had been on hypertensive medications for at least six months.

Study design

The study was a hospital-based, descriptive, cross-sectional study which lasted for 3 months from December 2017 to February 2018. The sample size was calculated to be 400 using the Cochran's formula considering a 95% confidence interval and 5% relative precision.⁹

A systematic sampling method was employed in the recruitment of the patients. With a sampling frame of 2100 and sample size of 400, the calculated sampling interval was approximately five. The first hypertensive patient recruited into the study was selected by simple random sampling via ballot method from among the first five known hypertensive patients. Subsequently, every fifth known hypertensive patient who presented to the clinic and consented to the study was recruited within the planned period of the study.

Study tool

Data was obtained using a semi-structured interviewer-administered questionnaire consisting of socio-demographic characteristics and Morisky medication adherence scale (MMAS-4).

Data analysis

The data collected were analyzed using SPSS version 22 for windows (SPSS, Chicago, IL, USA). Bivariate analysis was performed using Pearson's Chi square and odds ratio.

Ethical consideration

Ethical approval for the study was obtained from the University of Port Harcourt Teaching Hospital Ethics Committee. Informed consent was sought and obtained from each study participant. Anonymity and confidentiality of the information was obtained.

RESULTS

Socio-demographic characteristics of the respondents

The respondents recruited for this study were hypertensives with age ranging from 23-62 years and a mean age of 46.02±7.61 years. The study comprised of more females 70.5% (n=282) than males 29.5% (n=118). Majority of the respondents were married 65.3% (n=261), while 9.7% (n=39) were singles. The highest proportion of the respondent 35.4% (n=142) had tertiary education followed by those with secondary level of education who made up 35.3% (n=141) of the population.

Table 1: The socio-demographic characteristics of the respondents (n=400).

| Variables | N | % |
|--------------------------|-----|------|
| Age | | |
| 20-29 years | 4 | 1.0 |
| 30-39 years | 72 | 18.0 |
| 40-49 years | 189 | 47.3 |
| 50-59 years | 115 | 28.7 |
| ≥60 years | 20 | 5.0 |
| Sex | | |
| Male | 118 | 29.5 |
| Female | 282 | 70.5 |
| Marital status | | |
| Single | 39 | 9.7 |
| Married | 261 | 65.3 |
| Separated/divorced | 14 | 3.5 |
| Widowed | 86 | 21.5 |
| Educational level | | |
| None | 19 | 4.8 |
| Primary | 98 | 24.5 |
| Secondary | 141 | 35.3 |
| Tertiary | 142 | 35.4 |

Medication adherence of respondents

The sample was categorized into two according to their MMAS-4 scores into adherent group (MMAS score ≥3) and non-adherent group (MMAS score <3). In this study, 71.2% were not adherent to medications while only 28.8% (n=115) had good adherence to antihypertensive medications.

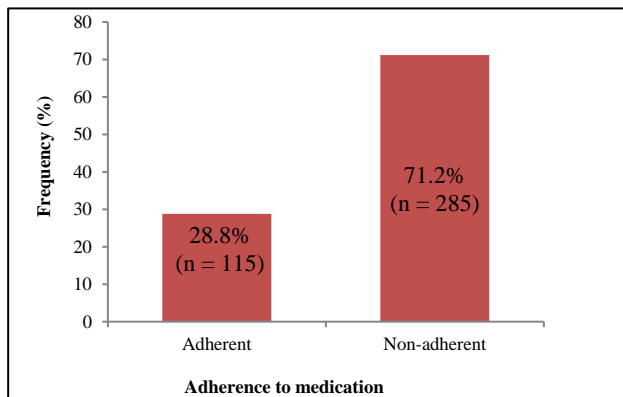


Figure 1: Distribution of adherence status among the respondents.

Blood pressure control status of the respondents

In this study, 22.8% (n=91) had controlled blood pressures (systolic blood pressure of <140 mmHg and a diastolic blood pressure of <90 mmHg) while 77.2% (309) had uncontrolled blood pressures (systolic blood pressure of ≥140 mmHg and/or a diastolic blood pressure of ≥90 mmHg).

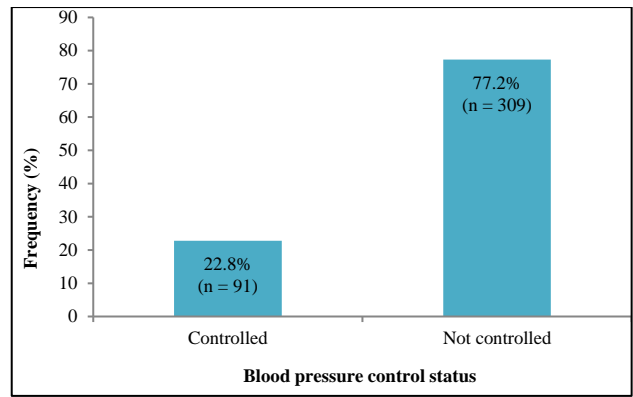


Figure 2: Blood pressure control status of respondents.

Medication adherence and blood pressure control

Table 2 reveals that a higher proportion of those that were adherent, 63 (15.8%) had controlled blood pressure in comparison to those that were non-adherent, 28 (7.0%). This was statistically significant (<0.05%).

Table 2: Association between medication adherence and blood pressure control.

| Medication adherence | BP control | | Total N (%) |
|----------------------|------------------|----------------------|-------------|
| | Controlled N (%) | Not controlled N (%) | |
| Adherent | 63 (15.8) | 52 (13.0) | 115 (28.8) |
| Non-adherent | 28 (7.0) | 257(64.2) | 285 (71.2) |
| Total | 91 (22.8) | 309 (77.2) | 400 (100.0) |

Chi square=94.236; p value: 0.0001* Odds ratio (OR):11.120 (6.51-19.00)

DISCUSSION

This study demonstrated poor antihypertensive medication adherence rate which was similar to other studies done in Nigeria and Brazil.⁹⁻¹¹ It has been suggested that medication adherence is low in developing countries due to paucity of health resources and inequities in access to health care.⁹ This could be attributed to cost implications of procuring medications considering that majority of individuals still pay out-of-pocket for their health care.^{2,3} Also, the similarities between the study done in Brazil and this present study could be due to the burden of treatment of asymptomatic disease like hypertension.^{2,11} On the other hand, higher antihypertensive medication adherence rates were reported in previous studies in Hong Kong, India and Lebanon.¹²⁻¹⁴ The differences between this study and the studies from the Asian countries might be the cost of drugs which is lower in the Asian countries. The medication adherence rate (28.8%) in this study was lower than the prevalence of 85.5% found in a study done in Borno, Nigeria.¹⁵ The Borno study was carried out at a cardiology clinic which is a specialized unit. Those who

attend cardiology clinics may have other comorbidities which may affect their willingness to adhere to their medications positively. It is also likely that specific health education may have contributed to these differences. Other possible reasons include differences in sample size, methods of sampling used and cultural differences.

In this study, the prevalence of blood pressure control was low, which was similar to studies done in different cities of Nigeria.^{5,6,16} This may have resulted as a consequence of poor medication adherence noted in this study. These findings serve to substantiate previous reports that adequate BP control rates are low in Nigeria and occur only in a fraction of treated hypertensives.^{6,7} Since individuals usually have to pay out of their pocket for the utilization of health services and treatment, it is very likely that health conditions such as hypertension may receive little attention as there are other contending needs that individuals may face.² Contrary to this, higher blood pressure control rate has been reported in Illorin, Nigeria and Hong Kong.^{12,17} This difference could have occurred due to the varying methodological approach adopted in the studies. The Illorin study was a longitudinal study in which the measurements of BP were taken over time with the patients' repeated visits. The anticipation of the blood pressure measurement in the subsequent visits for the study could have positively affected the adherence. Justifiably, those who had good adherence had a significantly higher rate of controlled hypertension.

Limitation of the study is that this study was carried out among hypertensive patients attending the family outpatient clinic in a tertiary hospital, medicine may introduce institutional bias.

CONCLUSION

Conclusively, the importance of good medication adherence in the overall care of individuals living with hypertension cannot be over-emphasized.

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Conflict of interest: None declared

Ethical approval: The study was approved by the Institutional Ethics Committee University of Port Harcourt Teaching Hospital

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