An Assessment of Antihypertensive Medication Adherence among Hypertensive Patients Attending the Outpatient Clinics in the University of Uyo Teaching Hospital, Uyo

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Abstract

Context: Hypertension is a global cause of significant morbidity, ranking top as a cause of increased disability-adjusted life years. Patients who do not take their prescribed medication show almost a fourfold increase in the risk of dying from stroke by the second year after being prescribed treatment and a nearly threefold increased risk in the 10th year when compared to patients who take their prescribed medication. Medication adherence is a key factor in the control of high blood pressure. Objective: The objective of the study was to assess the antihypertensive medication adherence rate of patients attending the outpatient clinics at the University of Uyo Teaching Hospital (UUTH) and to explore factors that affect their adherence to the medications. Materials and Methods: This was a descriptive cross-sectional study of adult hypertensive patients attending the outpatient clinics at UUTH, from May to July 2018, who had been placed on antihypertensive medication(s) for at least 6 months. A standardized Morisky Medication Adherence 8 Questionnaire for assessing medication adherence was modified and used for the data collection. The questionnaires were administered by trained interviewers. Data were analyzed using SPSS 20.0. Results: A total of 379 hypertensive patients took part in the study; 85.2% were adherent to antihypertensive medication(s), but only 14.2% showed good adherence. Four of the five dimensions considered in the Morisky Assessment greatly affected antihypertensive medication adherence. The mean age of the study participants was 60.8 ± 1.8 years, and 75% were male. Conclusion: Good adherence to antihypertensive medication was quite low in this study population, and it was affected by all dimensions of the Morisky Assessment; health-care providers should pay more attention to their patient’s drug adherence, educate them on medication adherence, and get them involved in their care.

Keywords: Adherence, antihypertensive, hypertension, medication

INTRODUCTION

Hypertension is a major contributor to the burden of diseases at global, regional, national, and even local levels. The proportion of people with hypertension increases with an increase in age from 1 in 10 people in the second decade of life to 5 in 10 people in the fifth decade of life. It is a major risk factor for stroke, myocardial infarction, vascular disease, and chronic kidney disease. Globally, mortality from cardiovascular diseases has been increasing since 2007, despite the fact that among cost-effective interventions that prevent these deaths, medications that reduce blood pressure and cholesterol are among the most cost-effective ones. In Nigeria, hypertension is the most common cardiovascular risk factor.

Due to the associated morbidity and mortality and the cost of management to society, preventing and treating hypertension is a public health challenge. Control of blood pressure is suboptimal in the general population. A large percentage of hypertensive patients have poor blood pressure control due to nonadherence.

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to many reasons, one major reason being poor medication adherence.  

Medication adherence is generally defined as the extent to which patients take medications as prescribed by their health-care provider.  

The World Health Organization defines medical adherence as the extent to which a person’s behavior in taking medication, following a diet, and/or executing lifestyle changes corresponds with agreed recommendations from health-care providers. Although adherence and compliance are often used interchangeably, adherence presumes the patient’s active participation and agreement with the recommendation, while compliance implies the patient’s passivity. Patients are considered adherent to their medication if their medication adherence percentage (defined as the number of pills absent in a given time (X) divided by the total number of pills prescribed by the physician in the same time period) is ≥80%.  

Expressed mathematically as number of pills absent at the time ÷ total number of pills prescribed for same time × 100 ≥80%.  

However, the assumption here is that the number of pills absent must have been taken by the patient. Factors affecting adherence to medications include socioeconomic related factors, health-care team/system-related factors, disease-related factors, and patient-related factors.  

Antihypertensive medication adherence rates vary widely with geographical locations, ranging from 8.1% (Italy) to 86.2% (India). In Africa, North-West Ethiopia reported 67.2%, while Ghana recorded 19.0%. In Nigeria, 22.0%, 36.8%, and 42.9% were reported in Jos, Ogbomoso, and Umuahia, respectively. Globally, nonadherence to a chronic medication regimen is common; approximately 43%–65.5% of patients who fail to adhere to prescribed regimens are hypertensive patients. Several factors have been reported to affect antihypertensive medication adherence, which include distance to the health facility, affordability of drugs, and marital status. Others are the pill load, formulation of the medication, that is whether loose or combined pills, mono- or polytherapy, and the schedule or frequency of the prescribed dose.  

There are no data on antihypertensive medication adherence in Akwa Ibom State; therefore, this study aimed at assessing the antihypertensive medication adherence rate of patients attending the outpatient clinics at the University of Uyo Teaching Hospital (UUTH) and exploring factors that affect their adherence to the medications.  

**Ethics**  
Permission was sought from the Health Research Ethics Committee of UUTH, Uyo. Respondents were duly informed of the study in detail and written informed consent was obtained.  

**Materials and Methods**  
**Study area**  
This study was conducted at UUTH. UUTH is located in the metropolitan city of Uyo, along Abak road. It is a 500-bed-space tertiary hospital whose mandate includes service delivery, training and research, and a referral center for most primary and secondary health facilities spread across the state and the neighboring states which are Abia, Rivers, and Cross River State. UUTH has adult outpatient clinics under the Departments of Family Medicine, Internal Medicine, Surgery, Gynecology, and the National Health Insurance Scheme Clinic. These clinics are open for consultation (on all weekdays) by the consultants and resident doctors in those specialties.  

**Study design**  
This was a cross-sectional study of adult hypertensive patients attending outpatient clinics at UUTH.  

**Study population**  
The study population included all male and female adult hypertensive patients who presented at the designated outpatient clinics for 3 months (May to July) in 2018. They must have been on outpatient treatment for at least 6 months and recorded at least two clinic visits, not critically ill patients, and had no conditions that affect cognition, for example, some psychiatric illnesses. Only those who gave informed written consent to participate were recruited for the study.  

**Data collection**  
The interviewer-administered questionnaire used contained three sections: a standardized Morisky Medication Adherence Scale (MMAS-8) to determine medication adherence, a section containing sociodemographic information of each of the participants, and a third section that assessed factors affecting medication adherence. The MMAS grades adherence of the participants, and a third section that assessed factors affecting medication adherence. The MMAS grades adherence as high, moderate, and low, based on total scores of ≥8 as high adherence, 6 to <8 as moderate, and <6 as low adherence. The questionnaire was administered by the researchers to all consented participants.  

**Statistical analysis**  
Data were analyzed using the Statistical Package for the Social Sciences, SPSS - IBM SPSS, Chicago, IL, USA - version 20. Descriptive analysis results are presented as proportions/percentages. The factors that affect medication adherence were determined using the Chi-square test. The level of significance was set at 0.05.  

**Results**  
Of the 379 respondents who participated in the study, males were 284 (75%). The majority (36.4%) of the respondents were in the age range 51–60 years, with a mean age of 60.75 ± 1.75 years. Their mean monthly income was N15,949.37 ± 2389.92. All, except 5 (1.3%) of them, were Christians and 349 (92.1%) were married. Close to two-third (62.3%) of the respondents had received some form of counseling at diagnosis and 51.5% of them had other comorbidities.  

Based on the MMAS-8 grading of adherence, 14.8% had poor adherence, 71.0% had moderate adherence, while 14.2% had good adherence. However, using the cutoff scores
of ≥6 as adherent and <6 as nonadherent, 85.2% of the study participants were adherent to antihypertensive medications [Chart 1].

The factors found to have a significant effect on antihypertensive medication adherence were long waiting times, card fee, poor communication skill of doctors, cost of drugs, number of drugs taken per day, duration patients have to take drugs, lack of immediate benefits of drugs, side effects of treatments, presence of comorbidities, knowledge about disease, how seriously disease and side effects are viewed, how efficient treatment is viewed, severity of symptoms, and depression about condition [Table 1].

**Discussion**

This study aimed at assessing the antihypertensive medication adherence rate of the participants and exploring the factors that affected their adherence to the medications, using the MMAS-8. The overall antihypertensive medication adherence rate in this study was much higher than what was obtained in most other studies reviewed. A systematic review and meta-analysis of 28 similar studies (in 15 countries) showed a lower antihypertensive medication adherence when compared to this study. However, it was slightly lower than 86.3% observed in a study in India.

The difference in the study population may have been one of the factors responsible for the higher rate observed in the current study. For instance, a community-based assessment in Ibadan observed a lower antihypertensive medication adherence of 51%. Antihypertensive medication adherence rate has been reported to be higher in patients who attend specialty clinics when compared to those attending general outpatient clinics, as there are regular reminders on the importance of treatment compliance at the specialty clinics. The study in India, which showed a slightly higher rate was conducted among hypertensive patients on their first clinic visit, while hypertensive patients on monotherapy in the United States showed a lower adherence rate.

Other methodological factors such as different data collection tools and grading scales may explain the differences observed. For example, using MMAS scores of ≥8 to determine adherence gave a good adherence rate of 14.2% in this study. This would have shown the adherence to be the least compared to all other studies reviewed; for instance, similar studies in the primary care clinic in the Federal Medical Centre, Umuahia and hypertension clinic in the Management Sciences for Health, Kano did not use the MMAS-8 but rather used a self-developed questionnaire and observed good adherence rates of 43% and 54%, respectively, while a multicenter study in Ghana and Nigeria which used MMAS-8 scores of ≥8 to determine adherence observed a comparatively higher rate.

Most of the reported factors that showed significant association with antihypertensive medication adherence had been reported by other studies. These factors are observed in the five domains considered in the MMAS-8 tool. However, only one factor (poor living condition) in the socioeconomic dimension was significantly associated with antihypertensive medication adherence.

Reported health-care system factors that significantly affected the patient’s medication adherence included long waiting times, card fee, poor communication skills of the doctor, and the cost of the drugs. The cost of a drug is a recurring factor in both health-care system and therapy-related dimensions, and many studies have reported these to affect medication adherence. In addition, poor communication skills of the physician have also been noted to affect medication adherence. This was reported by other studies and may be linked to the knowledge of hypertensive patients about the disease, as good communication by the physician can improve the patient’s knowledge, which may improve their medication adherence.

Therapy-related factors that significantly affected adherence were the number of drugs a patient takes per day and the daily dosing. Supporting this finding are the studies in India and Port Harcourt. Monotherapy and once-daily medication had a positive role in adherence when compared to polytherapy and more than once-daily medication. Another therapy-related factor that affected adherence was the side effects of treatment. This corroborates the findings from a Zambian study where patient’s perception of dizziness as a side effect of hypertensive medication commonly hindered their adherence, with them stating that it is more unpleasant than the symptoms of hypertension. Similar studies in Lagos and Takoradi reported that side effects of medications accounted for a significant proportion of noncompliance. More so, because the symptoms of hypertension are often subtle and may go unnoticed, as such side effects of medications may be prominent and make the patient feel worse, thus reducing the level of patient’s adherence to the treatment plan. Furthermore, in this study, depression about the disease condition was
Table 1: Factors related to antihypertensive medication adherence

| Factors                                             | Response** | Total | Chi-square test | P     |
|-----------------------------------------------------|------------|-------|-----------------|-------|
|                                                    | Poor       | Moderate | Good |                   |       |
| Health-care system                                 |            |         |      |                   |       |
| Long waiting time                                  | Yes        | 35     | 146  | 33                | 214   | 6.335   | 0.012* |
|                                                     | No         | 21     | 123  | 21                | 165   |         |       |
| Seeing different doctors on different days          | Yes        | 21     | 124  | 27                | 172   | 3.232   | 0.070 |
|                                                     | No         | 35     | 145  | 27                | 207   |         |       |
| Distance to hospital                                | Yes        | 31     | 134  | 28                | 193   | 1.29    | 0.719 |
|                                                     | No         | 25     | 135  | 26                | 186   |         |       |
| Card fee                                            | Yes        | 28     | 146  | 34                | 208   | 42.217  | 0.000*|
|                                                     | No         | 28     | 123  | 20                | 171   |         |       |
| Poor communication skill of your doctor             | Yes        | 7      | 25   | 7                 | 39    | 5.171   | 0.042*|
|                                                     | No         | 49     | 244  | 47                | 340   |         |       |
| Cost of drug                                        | Yes        | 27     | 129  | 32                | 188   | 12.117  | 0.003*|
|                                                     | No         | 29     | 140  | 22                | 191   |         |       |
| Therapy-related dimension                           |            |         |      |                   |       |
| Number of drugs you take per day                    | Yes        | 12     | 74   | 10                | 96    | 21.14   | 0.001*|
|                                                     | No         | 44     | 195  | 44                | 283   |         |       |
| Duration you have to take the drug                  | Yes        | 44     | 206  | 42                | 292   | 12.71   | 0.039*|
|                                                     | No         | 12     | 63   | 12                | 87    |         |       |
| Lack of immediate benefits of treatment             | Yes        | 29     | 138  | 32                | 199   | 6.44    | 0.048*|
|                                                     | No         | 27     | 131  | 22                | 180   |         |       |
| Side effects of treatment                           | Yes        | 34     | 136  | 30                | 200   | 19.22   | 0.000*|
|                                                     | No         | 22     | 133  | 24                | 179   |         |       |
| Frequent changes in drug regimens                   | Yes        | 29     | 145  | 32                | 206   | 3.14    | 0.175 |
|                                                     | No         | 27     | 124  | 22                | 173   |         |       |
| Cost of drug                                        | Yes        | 27     | 155  | 25                | 207   | 17.22   | 0.008 |
|                                                     | No         | 29     | 114  | 29                | 172   |         |       |
| Patient-related dimension                           |            |         |      |                   |       |
| Busy schedule                                       | Yes        | 24     | 134  | 30                | 188   | 2.08    | 0.092 |
|                                                     | No         | 32     | 135  | 24                | 191   |         |       |
| Other health condition                              | Yes        | 21     | 87   | 20                | 128   | 19.332  | 0.003*|
|                                                     | No         | 35     | 182  | 34                | 251   |         |       |
| Knowledge about the disease                         | Yes        | 26     | 142  | 27                | 195   | 9.271   | 0.012*|
|                                                     | No         | 30     | 127  | 27                | 184   |         |       |
| How serious you view the disease                    | Yes        | 29     | 161  | 35                | 225   | 36.12   | 0.000*|
|                                                     | No         | 27     | 108  | 19                | 154   |         |       |
| How efficient you view the treatment                | Yes        | 34     | 147  | 28                | 209   | 3.77    | 0.006*|
|                                                     | No         | 22     | 122  | 26                | 170   |         |       |
| Socioeconomic dimension                             |            |         |      |                   |       |
| Presence or absence of support from family and friends| Yes    | 31     | 111  | 34                | 166   | 2.004   | 0.335 |
|                                                     | No         | 25     | 158  | 30                | 213   |         |       |
| Presence/utilization of health insurance             | Yes        | 16     | 82   | 12                | 107   | 1.774   | 0.621 |
|                                                     | No         | 43     | 187  | 42                | 272   |         |       |
| Cultural beliefs about the illness                  | Yes        | 32     | 138  | 29                | 199   | 4.22    | 0.050 |
|                                                     | No         | 24     | 131  | 25                | 180   |         |       |
| Poor living condition                               | Yes        | 21     | 123  | 29                | 173   | 16.299  | 0.017*|
|                                                     | No         | 35     | 146  | 25                | 206   |         |       |
| Difficulty in finding drugs                         | Yes        | 26     | 151  | 24                | 201   | 0.669   | 0.881 |
|                                                     | No         | 30     | 118  | 30                | 178   |         |       |
| Condition-related dimension                         |            |         |      |                   |       |
| Lack of symptoms                                    | Yes        | 29     | 129  | 31                | 185   | 2.04    | 0.789 |
|                                                     | No         | 31     | 130  | 23                | 194   |         |       |
| Severity of symptoms                                | Yes        | 25     | 122  | 36                | 193   | 14.501  | 0.006*|
|                                                     | No         | 31     | 147  | 18                | 186   |         |       |

Contd...
Table 1: Contd...

| Factors                             | Response** | Adherence | Total | Chi-square test | P     |
|-------------------------------------|------------|-----------|-------|-----------------|-------|
|                                     |            | Poor      | Moderate | Good |                   |       |
| Depression about your condition     | Yes        | 27        | 131    | 20   | 178               | 23.22 | 0.000* |
|                                     | No         | 29        | 138    | 34   | 201               |       |        |

*Statistically significant; **Response to the question “does the ‘factor’ affect antihypertensive medication adherence?*

associated with poor adherence to medication. A similar finding was observed in the USA study, where treating depression was associated with persistence of antihypertensive therapy among their patients, suggesting that depression could be a cause of poor adherence to medication.

The study shows that patients’ perception of the seriousness of the disease directly affects adherence, as fear of complications such as cerebrovascular or cardiovascular complications motivates them to adhere to their medications. This was also observed in a study in South India, as perceived susceptibility to the complications of hypertension had a direct link with adherence to therapy. In a study in India, affordability of drugs had a significant effect on adherence and a study from Ethiopia showed that distance to the hospital affected adherence significantly; these factors were also observed in this study as participants reported that the cost of drugs and distance to the hospital affected their adherence to antihypertensive medications.

**Conclusion**

Although most of the hypertensive patients attending the adult outpatient clinics at UUTH are adherent to their antihypertensive medications, very few of them reported good adherence. All the dimensions of MMAS-8 were implicated in medication adherence. Several factors significantly affected their antihypertensive medication adherence, including long waiting times, poor communication skills of the doctor, cost of drugs, duration of therapy, and side effects of treatment.

To ensure better adherence, clinicians should pay more attention to educating patients on their illness and get them to be involved in their care. To reduce the cost of drugs, facility pharmacies should stock commonly used hypertensive drugs, preferably avoiding brand names.

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Nil.

**Conflicts of interest**

There are no conflicts of interest.

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