Original Article

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.[1] 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.[2] 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.[3] In Nigeria, hypertension is the most common cardiovascular risk factor.[4]

Due to the associated morbidity and mortality and the cost of management to society, preventing and treating hypertension is a public health challenge.[5] Control of blood pressure is suboptimal in the general population.[5] A large percentage of hypertensive patients have poor blood pressure control due

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to many reasons, one major reason being poor medication adherence.[4]

Medication adherence is generally defined as the extent to which patients take medications as prescribed by their health-care provider.[6]

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.[7] 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%.[7]

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.[8]

Antihypertensive medication adherence rates vary widely with geographical locations, ranging from 8.1% (Italy) to 86.2% (India).[9,10] In Africa, North-West Ethiopia reported 67.2%, while Ghana recorded 19.0%.[11,12] In Nigeria, 22.0%, 36.8%, and 42.9% were reported in Jos, Ogbomoso, and Umuahia, respectively.[13-15] 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.[16] Several factors have been reported to affect antihypertensive medication adherence, which include distance to the health facility, affordability of drugs, and marital status.[17-19] 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.[20]

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 as high, moderate, and low, based on total scores of ≥8 as high adherence, 6 to <8 as moderate, and <6 as low adherence.[21] 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 ₦15,949.37 ± 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
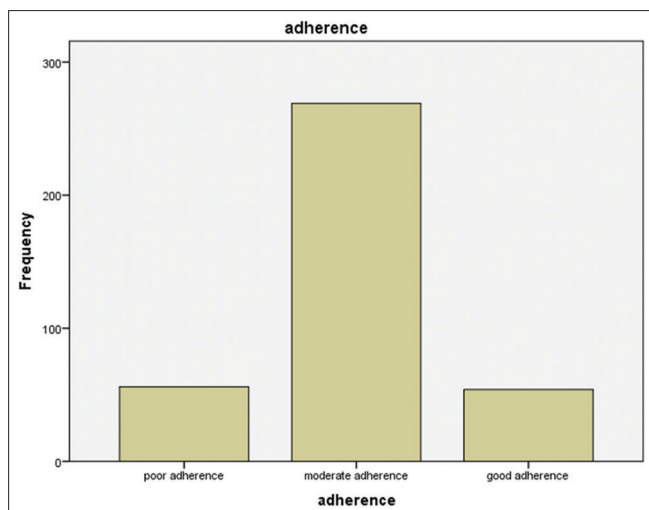
Chart 1: Distribution of respondents based on MMAS-8 grading of antihypertensive medication adherence

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.[9,11-16] A systematic review and meta-analysis of 28 similar studies (in 15 countries)[16] 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.[10]

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%.[17] Antihypertensive medication adherence rate has been reported to be higher in patients who attend specialty clinics when compared to those attending general outpatient clinics,[14] as there are regular reminders on the importance of treatment compliance at the specialty clinics. The study in India[10] 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[18] 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[15] and hypertension clinic in the Management Sciences for Health, Kano[19] 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[20] 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.[11,12,19,22] In addition, poor communication skills of the physician have also been noted to affect medication adherence. This was reported by other studies[11,13,21,22] 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.[11,13,19-21]

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[10] and Port Harcourt.[23] 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.[24] Similarly, studies in Lagos and Takoradi reported that side effects of medications accounted for a significant proportion of noncompliance.[12,22] 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**	Adherence			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[25] 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.[26] In a study in India, affordability of drugs had a significant effect on adherence[26] and a study from Ethiopia showed that distance to the hospital affected adherence significantly;[27] 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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Conflicts of interest
There are no conflicts of interest.

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