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Influencing Factors on Hypertension Medication Adherence at Kampala International University Teaching Hospital in Ishaka, Uganda

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ABSTRACT

The Uganda office of the World Health Organization (WHO) reported that four out of ten Ugandans have high blood pressure, but low adherence to hypertension medications remains a public health challenge. A study was conducted to assess factors influencing adherence to hypertension medication among patients attending KIUTH in Bushenyi District, Uganda. The majority of participants were female, with 47% having hypertension for over five years and 63% having a family history of hypertension. 80% could name their drug, 60% understood the dose, and all knew the frequency and time to take their medication. However, over half of the respondents (56.7%) were unaware of the adverse effects of their medication. Adherence was generally good (62%), but 63% did not take their medication on some days. Variables impacting adherence to hypertension therapy included affordability, clinic attendance, education level, waiting time, and accessibility.

Keywords: High blood pressure, Adherence, hypertension medications, Public health, antihypertensive drugs.

INTRODUCTION

Hypertension cases have their historical origins as early as 2600 B.C. when the ancient Chinese could only suspect hypertension by the quality of one's pulse[1, 2]. Despite these early origins, it took centuries before hypertension was declared a chronic disease. According to WHO, low adherence to hypertension medications remains a public health challenge[3, 4]. The world population of people with high blood pressure or uncontrolled hypertension reduced marginally between 1980 and 2008. However, because of population growth and aging, the number of people with uncontrolled hypertension rose from 60 million in 1980 to nearly 1 billion in 2018 [5].

Mfinanga et al., [6] state that hypertension or blood pressure is responsible for 1.6 billion deaths worldwide each year, with 80% of these deaths occurring in low- and middle-income countries like Uganda. A report by U.N.D.P [7] states that the number of people with hypertension in developed and developing countries is drastically increasing. It shows that in some African countries, as much as half of the adult population has high blood pressure. This U.N.D.P [7] report continues to state that in low- and middle-income countries, where there are many people of low socioeconomic status, hypertension cases and deaths are on the increase. According to Kvarnström et al. [8], medication adherence is a complex multidimensional phenomenon involving various personal and socioeconomic/cultural factors, which are not clearly understood. It is, therefore, important that healthcare professionals and medical sociologists understand what factors affect compliance in their own context to manage the disease effectively.

A study by Kharsany and Quarraisha [9] states that more people (12.5% in sub-Saharan Africa) die from hypertension-related conditions compared to HIV/AIDS at 12.3% and malaria at 7.3%. Mills et al., [5] report showed that in 2000, over 1

billion of the world's population had hypertension, and this was estimated to rise by 40% in 2025. In most high-income countries, there is an increased diagnosis of hypertension and treatment with low-cost medication, which has resulted in reduced mean blood pressure across the population. This has led to a great reduction in deaths related to hypertension complications [10]. In contrast, however, in African countries, over 40% of adults are estimated to have high blood pressure, and to make it worse, most of them remain undiagnosed even though many of these cases could be treated with low-cost medication, which could significantly reduce the risk of death [11–13].

In Africa, the most common cause of uncontrolled hypertension is caused by non-adherence to anti-hypertensive drugs. Patients' understanding of their drug regimens helps to improve their adherence; this will help prevent the complications of hypertension, which are debilitating and, if not prevented, can increase the burden of a disease that is already on the increase [14]. A by Parati et al., [15] study on the prevalence rates of hypertension among the world's continents shows that Africa has the highest prevalence rates of hypertension at 46% for both men and women.

The Ministry of Health estimates as reported by Guwatudde et al., [16] that by the year 2030, over 8.6 million Ugandans out of an estimated population of over 50 million will have hypertension, representing a percentage of 17.2% of the population. A number of reviews have found that in developed countries, compliance/adherence to long-term medical therapies, including hypertension medication in the population, is around 50% and is assumed to be much lower in low-income countries, including Uganda [17]. Adherence is key to therapeutic success [18]. Poor adherence to treatments for chronic diseases is a worldwide problem and was highlighted as a problem of striking magnitude by the World Health Organization [17].

Adherence is of particular concern in hypertension, with about half of the patients prescribed an antihypertensive drug stopping taking it within 1 year [19]. Uncontrolled hypertension causes 50% of the total coronary heart disease (CHD) deaths globally, and poor medication adherence is one of the leading causes of failure to achieve BP control[19]. The costs of non-adherence to medication are both personal and economic, with knock-on costs as a result of increased demands for healthcare resources if there is a deterioration in patients' health [20]. Lack of medication adherence is estimated to cost European governments €125 billion per year, and the cost arising due to complications of poor adherence represents 14% of total healthcare expenditure in the United Kingdom's National Health Service [18]. It is recognized that payment for drug treatment has some impact on drug adherence but doesn't prevent non-adherence. In the US, the relationship between non-adherence and associated costs has been depicted as a continuous cycle, with poor medication adherence leading to poor health outcomes, increased service utilization and healthcare costs, which are passed on to the patient and then lead to further effects on adherence [21]. Patient-tailored and measurement-guided interventions are required to achieve sufficient adherence to therapeutic drug regimens. Achieving satisfactory adherence may have a far greater impact than any other maneuver to improve antihypertensive treatments, and healthcare systems must evolve to meet this challenge [18].

METHODOLOGY

Study Design

A quantitative cross-sectional study approach was utilized to investigate the factors influencing adherence to hypertension medication among patients attending KIUTH in Ishaka, Bushenyi District.

Study Area

The study was carried out in the GOPD (General Outpatient Department) of KIUTH, located in Western Uganda, approximately 300 kilometers from Kampala, Uganda's capital city. The hospital is situated along the Mbarara-Kasese highway in Ishaka

town, within the Bushenyi-Ishaka municipality, Bushenyi district. It serves a catchment area of over 1 million people and has a bed capacity for 610 patients. Key services provided at KIU-TH include Surgery, Gynecology and Obstetrical care, Medicine, Dentistry, and Orthopedics.

Study Population

The study focused on hypertensive patients attending KIUTH in Ishaka, Bushenyi District.

Inclusion Criteria

All hypertensive patients attending KIUTH in Ishaka, Bushenyi District at the time of data collection who were willing to participate in the study were included.

Exclusion Criteria

Hypertensive patients attending KIUTH in Ishaka, Bushenyi District who declined to participate in the study were excluded.

Sample Size Determination

The sample size was determined using Kish Leslie's formula [22] as follows:

$n = (Z\alpha/2)^2 * p(1-p) / e^2$

Where 'n' is the desired minimum sample size, Z is the value at $\alpha = 0.05$ (1.96), e is the proposed margin of error (0.1), and 'p' is the proportion of hypertensive patients attending KIUTH in Ishaka, Bushenyi District. Since there was no existing literature on 'p', a conventional value of 0.5 was used. Consequently, the minimum calculated sample size was 96 respondents. However, the researcher was able to interview 150 respondents in this study.

Sampling Procedure

A combination of simple random and purposive sampling techniques were employed to select respondents for participation in the study, from whom data was collected.

Dependent Variable

Adherence to hypertension medication.

Independent Variables

Factors such as knowledge, attitudes, and lifestyle practices among hypertensive patients, as well as socio-demographic factors influencing adherence to hypertension medication among patients attending KIUTH.

Data Collection Method and Tool

Data was collected using an interviewer-administered questionnaire. The researcher met with the targeted respondents who participated in the study, obtained their permission for data collection, and ensured they provided informed consent. The researcher assisted respondents in filling out the questionnaires by providing explanations when necessary. Once completed, the questionnaires were collected, and data was prepared for analysis. A structured questionnaire was used, and participants selected the best alternative from the provided options.

Data Entry and Cleaning

The data in the questionnaires underwent a completeness check, were cleaned, and sorted to remove obvious inaccuracies and omissions. Subsequently, the data was coded and entered into a computer.

Data Analysis

The qualitative data collected were subjected to statistical analysis and documented using Microsoft Excel and Word version 2019. The analyzed data were presented in the form of tables and graphs, forming the basis for discussion and drawing conclusions, among other purposes.

Quality Control

To ensure quality control, the researcher conducted a pretest using 8 questionnaires before the actual study. This allowed for necessary adjustments to the questionnaire.

Ethical Considerations

Participants were provided with information regarding the research and were asked for their consent. Each participant's choice to participate or not was respected, and data collected from participants was kept confidential.

RESULTS

Table 1: Demographic characteristics

Variable	N	%
Age group		
<50	35	23
51-65	110	73
>65	5	3
Gender		
Male	50	33
Female	101	67
Educ. Level		
None	68	46
Primary	28	19
Secondary	33	22
Tertiary	20	13
Occupation		
Business person	30	20
Civil servant (government employee)	35	23
Private sector	30	20
Retired person	15	10
Still a student	0	0
Unemployed	40	27
Religion		
Orthodox	0	0
Muslim	5	3
Protestant, catholic	105	70
Other	40	27
Marital status		
Married	130	87
Never married	5	3
Separated/divorced	15	10
Other	0	0
Monthly income		
1,000,000-2,000,000	15	10
Less than 1,000,000	80	53
More than 2,000,000	0	0
No monthly salary	55	37
Time to reach clinic/ hospital		
0–30 min	35	23
31–60 min	55	37

61–120 min	40	27
>120 min	20	13
Area of residence		
Rural	65	43
Urban	85	57
Smoking status		
Ever smoker	15	10
Never smoker	135	90
Alcohol consumption		
Non-drinker	125	83
Moderate drinker	25	17
High-risk drinker	0	0
Exercise (per week)		
No	35	23
1–2 times	75	50
≥3 times	40	27

This study enlisted the participation of 150 people. They were all considered in the study. The socio-demographic characteristics of the study participants are shown in the table above. The bulk of the participants 110(73%) were between the ages of 51 and 65, with 35(23%) being under the age of 50 and 5(3.3%) being over the age of 65. A total of 101 (67%) participants were female. The majority of participants (70%) were Catholics and protestants, 3% were Muslims, and 27% belonged to other religious organizations. In addition, 87% of the participants were married, 3% had never married, and 10% were separated or divorced. Furthermore, 28 (19%), 33 (22%), and 20 (13%), respectively, of the individuals had completed primary, secondary, and higher education, while 68 (46%), had no formal education. Regarding their economic status, most of the participants 80(53%) earned less than one million monthlies, 15(10%) earned between 1-2 million and 55(37%) earned no monthly salary at all. Furthermore, 65(43%) and 85(57%) of the respondents lived in rural and urban areas respectively. Most of them (90%) said they had never smoked, 125(83%) claimed they did not take alcohol and 25(17%) were moderate drinkers. The patients also noted that it took them 0-30 minutes (23%), 31- 60 minutes (37%), 61-120 minutes (27%) and more than 120 minutes (13%) to reach the health centre where they receive treatment. Half of the participants claimed to exercise 1-2 times a week and 23% did not exercise at al

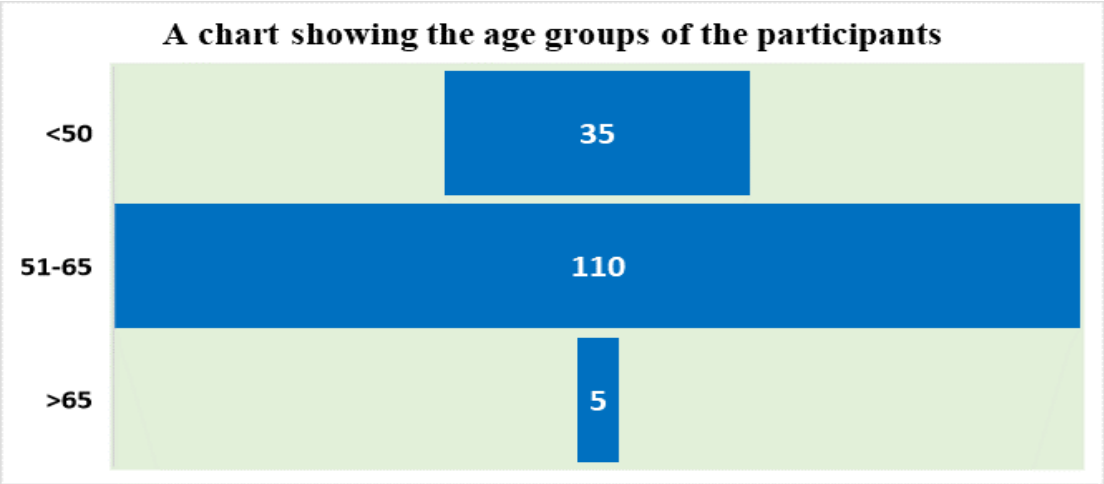

Figure 1: Age groups of the participants

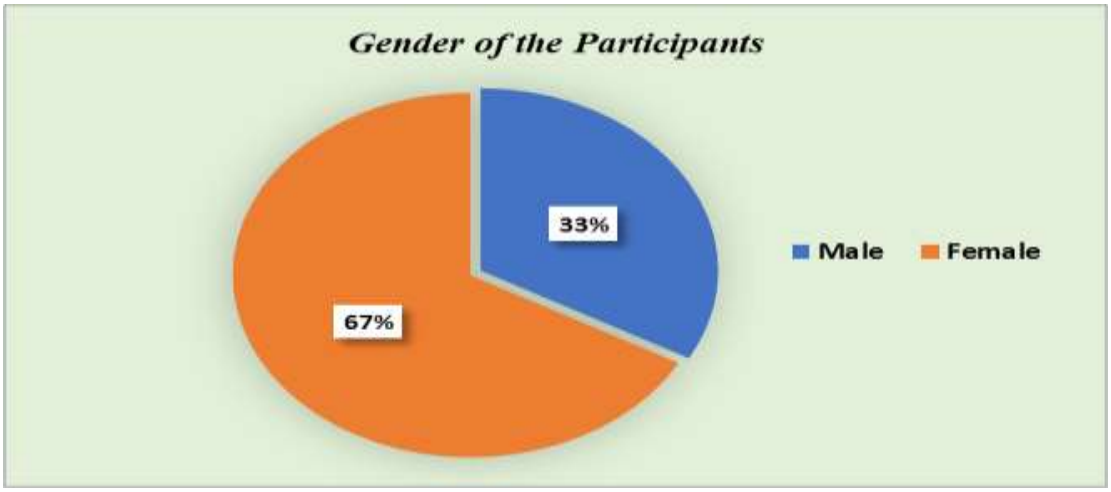

Figure 2: Gender of the participants

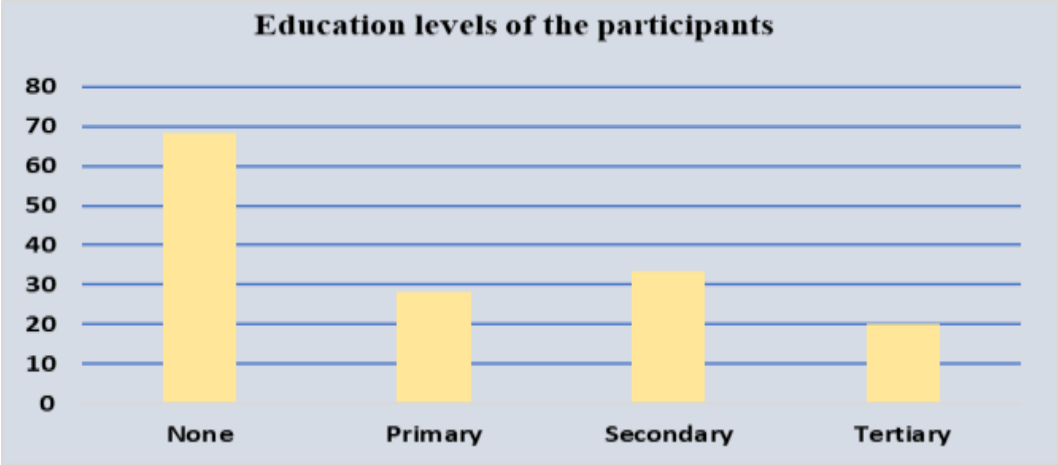

Figure 3: Education levels of the participants

Disease-Related Characteristics

Table 2: Disease-related characteristics

Questions	N	%
Do you know the disease condition that you have?		
Yes	145	97
No	5	3
Duration of hypertension (Years)		
Less than 1	10	7
1-5.	70	47
More than5	70	47

The majority 145(97%) knew the disease they suffered; 70(47%) of them had had it for more than 5 years while 10(7%) had less than one year. More than half (63%) of the patients had a history of hypertension in their family.

Respondents' Medication knowledge

Table 3: Respondents' Medication knowledge

Question	N	%
Can you name your medication?		
Yes	120	80
No	30	20
Do you know the dose to take?		
Yes	90	60
No	60	40
Do you know how many/or frequency of administration?		
Yes	150	100
No	0	0
Do you know when or what time to take your medication?		
Yes	150	100
No	0	0
How do you identify your medicine?		
Shape	0	0
Color	0	0
Depend on others to identify	35	23
Label	115	77
Are you suggesting the same prescription to your intimates with the same conditions?		

Yes	90	60
No	60	40
Where do you keep the medication?		
Fridge	0	0
Cupboard	30	20
Bag	95	63
In small tin	25	17
When is the next refill due?		
Aware	125	83
Not aware	25	17
How long do you have to take this medication for?		
For a short-term therapy	40	27
Unsure,	5	3
Knows if it is a long- or short-term therapy	105	70
Do you know about any possible side effects of this medication?		
No idea of the side effects	85	57
Knows some of the side effects	35	23
Gave at least one side effect.	30	20
What would you do if you forgot to take a dose of this medication?		
Would act inappropriately (e.g. take double the quantity next time)	30	20
Would seek advice from a pharmacist, nurse, caretaker, or GP	5	3
Would take appropriate action (e.g. take the correct dose next time)	115	77
Do you take your blood pressure drugs as advised by your doctor?		
Yes	150	100
No	0	0
Sometimes	0	0
Never	0	0

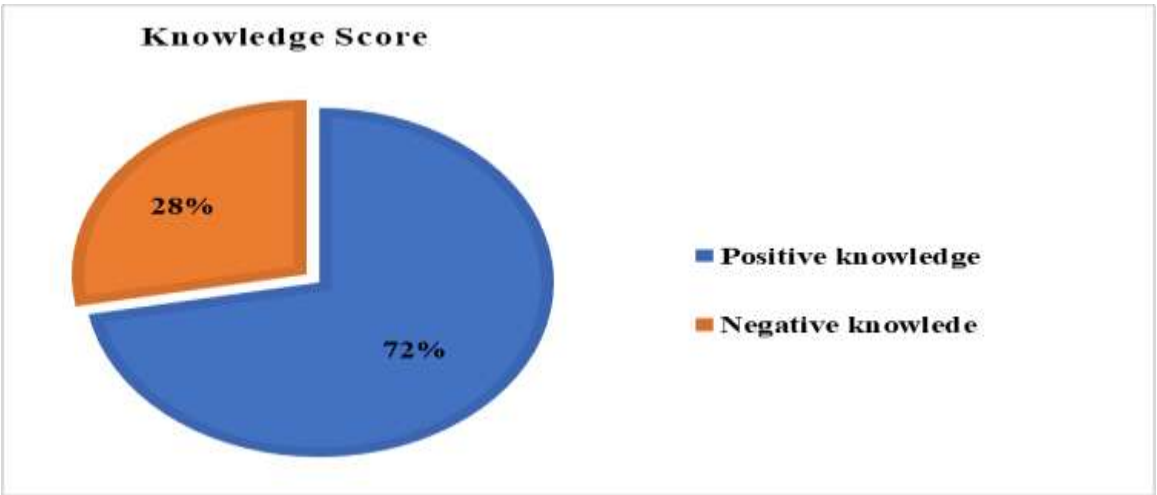

Figure 4: Knowledge score

In terms of medication knowledge, 80% of participants could name their drug, 60% understood the dose to take, and all knew the frequency and time to take their prescription. The majority of them (77%) identified their medicine by its label, while 23.3% relied on others. 125 (83%) were aware of their refill date, while 25 (17%) were unaware. More than half of the respondents (56.7%) were unaware of the adverse effects of their medication. All of the patients stated that they took their blood pressure medication as prescribed by their doctor. Ninety (60%) of patients indicated they would recommend the same prescription to friends and family suffering from the same ailments. In terms of medicine storage, 30(20%) kept it in a cupboard, 95(63%) kept it in a bag, and 53(16.7%) maintained it in a small tin.

Patients' responses to the causes of non-adherence

Table 4: Patients' responses on the causes of non-adherence

	Yes	%	No	%
I get encouraged by family members to take medicine	85	57	60	40
Work/ Home/ hospital environmental settings affect my drug compliance	70	47	75	50
Lack of money can cause non-compliance with medication	130	87	20	13
Accessibility to the hospital affects drug compliance negatively	130	87	15	10
Long waiting time at the hospital affects my compliance Negatively	***140***	***93***	***10***	***7***
Difficulties in getting a physician affect my compliance Negatively	***40***	***27***	***90***	***60***
Unsatisfied clinic visits affect treatment compliance negatively	***55***	***37***	***95***	***63***
My age affects treatment compliance negatively	***40***	***27***	***110***	***73***
My level of education influences compliance with treatment positively	***35***	***23***	***110***	***73***
My attitude and beliefs can negatively influence the treatment compliance	***35***	***23***	***115***	***77***
My marital status can influence treatment compliance positively	***15***	***10***	***130***	***87***

Patients' adherence practices

Table 5: Patients' adherence practices

	N	%
Do you sometimes forget to take your medicine?		
Yes	60	40
No	90	60
Thinking over the past 2 weeks, were there any days when you did not take your medicine?		
Yes	95	63
No	55	37
Have you ever cut back or stopped taking your medicine without telling your doctor because you felt worse when you took it?		
Yes	35	23
No	115	77
When you travel or leave home, do you sometimes forget to bring along your medicine?		
Yes	35	23
No	115	77
Did you take all your medicines yesterday?		
Yes	135	90
No	15	10
When you feel like your symptoms are under control, do you sometimes stop taking your medicine?		
Yes	50	33
No	100	67
Taking medicine every day is a real inconvenience for some people. Do you ever feel hassled about sticking to your treatment plan?		
Yes	60	40
No	90	60
How often do you have difficulty remembering to take all your medicine?		
Never/rarely	60	40
Once in a while	75	50
Sometimes	10	7
Usually	5	3

The practice of adherence was generally good (62%). The majority of patients (60%) indicated they rarely forgot to take their prescription. However, more than half of the patients (63%) stated that they did not take their medication on some days during the previous two weeks. Half of those polled claimed they had trouble

remembering to take their medication on occasion, while only 3% said it was a constant struggle.

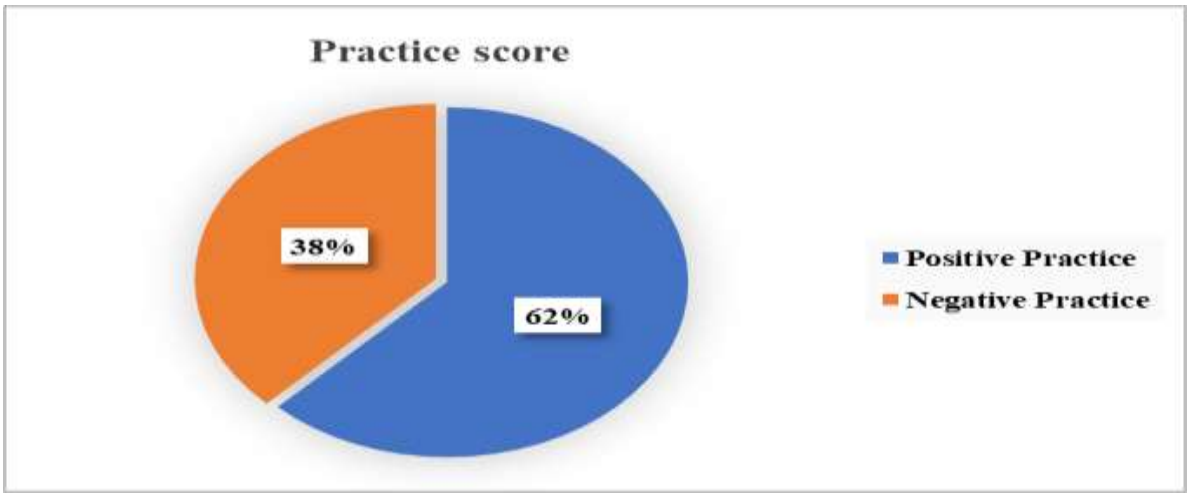

Figure 5: Practice score

DISCUSSION

Ensuring patient adherence to anti-hypertension medications to minimize the negative effects of hypertension is a significant public health challenge in many developing countries [5, 23]. Poor medication adherence is the leading factor in uncontrolled hypertension, catastrophic effects, and the wastage of healthcare resources. Non-adherence to medication may be one of the most important problems facing the delivery of hypertensive care [24]. This study aimed to identify variables associated with anti-hypertension medication adherence. The study included the participation of a total of 150 individuals. The analysis considered all of them. The majority of participants, 110 (73%), were between the ages of 51 and 65; 35 (23.3%) were under the age of 50; and 5 (3%) were above the age of 65. Najimi and colleagues reported that hypertension is more common in people aged 51-60 (26.9 percent) [25]. This is consistent with the findings of research conducted in Ethiopia and Nigeria, where the majority of study participants were aged 40 to 69 years [25–27], but contrasts with studies conducted in Awka, Nigeria, which found a prevalence of hypertension among those aged 71 to 80 years [28, 29].

It's also important to note that older people tend to be more responsible in following treatment recommendations than younger people, who sometimes take their health for granted. However, elderly people may face difficulties with treatment compliance because they believe they cannot function without socializing activities such as drinking alcohol or smoking cigarettes [30]. Furthermore, as their memory deteriorates with age, individuals may forget the proper time for taking their medications [31]

In terms of gender, 101 (67%) of the total participants were female. Females generally exhibit better health-seeking behavior than males, but this isn't always the case because many factors influence health-seeking behavior. For example, fewer females may be able to afford treatment expenditures than males [32]. The majority of participants identified as Catholics and Protestants (70%). Five (3%) of the 150 participants were Muslims, while the remaining 40 (27%) belonged to other religious groups. Religious beliefs can impact treatment adherence by discouraging behaviors such as drinking or smoking, which are associated with poor hypertension medication adherence. Furthermore, 87% of the participants were married, compared to 3.3% who had never married and 10% who had been either divorced or separated. Married couples can provide treatment support to one another by sharing therapy fees, covering transportation costs, and following suggested diets, among other things; they can also provide psychological support

[32]. The findings of this study are consistent with the findings of Guimaraes et al. [33], who found that marital status and psychological variables are some of the factors impacting adherence to hypertension treatment guidelines. All of these factors might contribute to better adherence to hypertension treatment guidelines.

Furthermore, 68 (46%) of participants had no formal education, compared to 28 (19%), 33 (22%), and 20 (13%) who had completed their primary, secondary, and higher education, respectively. Educated individuals have easier access to health information and can adopt a healthy lifestyle more easily than uneducated individuals, so adherence to treatment is expected to be higher among the educated. However, this isn't always the case because some of them intentionally ignore health advice and do the opposite [33].

In terms of their financial condition, the majority of participants—53 percent, 10%, and 36.7 percent, respectively—earned monthly wages of less than one million, one million to two million, and more than two million. A patient's financial and employment status determines their ability to meet treatment costs such as transportation and medical bills [34]. However, certain occupations are also associated with poor adherence because employees are busy most of the time and may forget to take medicines at the recommended time or may have risky occupational exposures that can exacerbate pre-existing debilitating hypertension [35]. Working in the mining sector or beer breweries, where alcohol is readily available, is one example of such exposure. The findings of this study are consistent with the findings of Algabbani and Algabanni. [36], who indicated that uneven access to health care due to factors such as transportation challenges might impact adherence to hypertension treatment guidelines.

Furthermore, 137 (43.3 percent) and 179 (56.7 percent) of respondents lived in rural and urban areas, respectively The majority of them (90%) had never smoked, 83% stated they didn't drink, and 16.7% acknowledged being moderate drinkers. The researcher created a knowledge score based on the structured questionnaire, and the sum of the components was eventually converted to a percentage. According to the survey, 72 percent of patients had adequate awareness of their medicine, while 28 percent had poor knowledge. Approximately 20% of study participants could read and pronounce the name of the medicine, while the remaining 80.0 percent couldn't. According to a similar study conducted in Lagos (Nigeria)[37], 52 of the respondents (34.2 percent) knew the names of all the drugs they were taking, 64 of the respondents (42.1 percent) knew only a few drugs by name, 23 of the respondents (15.1 percent) knew most but not all of the drugs by name, 10 of the respondents (6.6 percent) knew some of the drugs by name, and 3 respondents (2.0 percent) did not know the names of the hypertension drugs they were taking.

The patients' understanding of hypertension medication use is generally viewed as good. The majority of the population (67%) had one or two hypertension issues and had a poor grasp (79%) of the harmful side effects of the hypertension drugs they were taking. This is comparable to other studies conducted in Saudi Arabia [38], Uganda [39], and Nigeria [40], which found that the majority of patients used herbal treatments on a trial basis rather than based on past knowledge or experience. Several research studies on antihypertensive drug adherence have been undertaken; however, many of them lack information on pharmacological side effects knowledge. Similarly, according to Ghosh et al,[41] where a greater percentage of non-adherent patients among known patients in South India lacked information about the necessary prescription. This is also similar to findings from studies in South Africa [42]and Malaysia [10]) that found that awareness about the condition had a strong connection with drug adherence. According to Ahmad et al.[43], the direct association between adherence and medication knowledge suggests that healthcare professionals are in the best and most appropriate position to provide relevant information for enhanced management outcomes.

The treatment of hypertension might occasionally appear straightforward and easy. The difficulty it presents and the outcomes are likely to put hypertensive patients, their families, the healthcare system, and higher authorities in general in a difficult situation. Patients in the current research had suboptimal adherence practices (62.4%). According to prior research, suboptimal medication adherence for hypertension ranges from (23 per cent) to (77 per cent) [44]. This study's finding on antihypertensive medication adherence (85.1%) was lower than the preceding findings in Australia (72%), Malaysia (66%), Nigeria (72.5%), and Uganda (71%)[45]. The majority of patients (60%) indicated they hardly ever forget to take their prescription. However, more than half (63.3%) of the patients noted that there were days when they did not take their medicine in the previous two weeks.

CONCLUSION

Patients' understanding of how to use hypertension drugs is generally viewed as good (74%). However, patients' adherence practices in this study were unsatisfactory. Affordability, clinic attendance, education level, waiting time, and accessibility, according to patients, are variables impacting adherence to hypertension therapy.

Recommendations

1. The government should create income-generating activities for individuals with chronic illnesses like hypertension so that they can contribute to their medical bills, hence improving treatment adherence.
2. Adherence campaigns through local media should address patient fears about side effects and the complexity of treatment regimens by offering better options, such as seeking medical advice from the nearest health facility in case of severe drug reactions.
3. Improving clinic setups to shorten waiting times, as well as enhancing patient-provider relationships, will help improve hypertension treatment adherence.
4. More research should be done on factors influencing adherence to hypertension treatment recommendations in other parts of Uganda to come up with more comprehensive findings and better generalize conclusions.

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