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Original Research Paper

Pattern of Medication Belief and Blood Pressure Control among Hypertensive Patients; A Single Centre Study

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ABSTRACT:
Introduction: Patients' beliefs about their antihypertensive medications have been found to play an important role in characterizing their adherence patterns and influencing their blood pressure control. This study assessed the relationship between medication beliefs and blood pressure control among adult patients with hypertension attending the General Outpatient Clinic of Ekiti State University Teaching Hospital, Ado-Ekiti. ***Materials and methods****:* This was a cross-sectional study among 372 adult patients with primary hypertension who had been on treatment for at least 3 months, selected via systematic random sampling. Belief about antihypertensives was assessed using the BMQ-specific scale of the Belief about Medicines Questionnaire. The data collected were analysed using Statistical Package for Social Sciences Software (SPSS) version 25. ***Results:*** The mean age of the respondents was 60.99 (± 12.19 years). Male to female ratio was 1:2.4. The majority (81.5%) of the respondents strongly believed in the necessity of their antihypertensive medications. Less than half (44.6%) had optimal blood pressure control. There was no statistically significant relationship between blood pressure control and beliefs about medication. ***Conclusions:*** A larger proportion of patients had a stronger belief in the necessity of their antihypertensive medications, most of which had no optimal blood pressure control.

Keywords: Medication, Belief, blood pressure control, Patients, Hypertension

INTRODUCTION:

Hypertension is the most prevalent cardiovascular disorder in Nigeria, occurring in 86.4% of patients, with blood pressure control rates ranging from 2.8% to 56.6%. [1, 2, 3] Numerous explanations have been offered for the general lack of effective blood pressure control, with pharmaceutical belief being one of the most important. Treatment adherence is significantly higher among patients who believe that a specific medication is necessary for their well-being than among those who do not. [4] Similarly, existing research claimed that the main beliefs affecting patients' commonsense assessments of prescribed medications can be grouped into two groups: beliefs about the necessity of taking the medication to maintain one's health now and in the future (necessity beliefs) and worries about potential negative effects of taking the medication, such as addiction and long-term adverse effects (medication concern beliefs).[5] For hypertensive patients, beliefs such as being less concerned about the negative repercussions of using pharmaceuticals across their lifetime, low perceptions of the general harm of medicines as addictive substances and low perceptions of general overuse beliefs regarding drug prescriptions have been correlated with medication adherence, which in turn affects blood pressure control.[6]

In the same vein, the plethora of literature has documented the relationship between medication beliefs and blood pressure control in patients with hypertension. For instance, Al Noumani et al. from their study discovered participants with more concerned beliefs about medication were more likely to have uncontrolled blood pressure.[7] Similarly, Abdallah et al. revealed a statistically significant relationship between blood pressure control and specific beliefs about medicines in patients with hypertension. [8] Concentrating on the problem of uncontrolled blood pressure, this study explored the pattern of medication belief, and its relationship with

blood pressure control among adult patients with hypertension attending the General Outpatient Clinic of Ekiti State University Teaching Hospital (EKSUTH), Ado-Ekiti, Ekiti State Nigeria.

MATERIALS AND METHODS:

Study design:

This study adopted a hospital-based cross-sectional study.

Study Population:

It comprised of adult hypertensive patients aged 18 years and above

Selection Criteria:

The inclusion criteria consenting adult patients aged 18 years and above who had been on antihypertensive medication(s) for at least three months (This was to allow the respondents to form opinions about the care they had received). Exclusion criteria involved patients who were critically ill at the time of the study as they may not be able to give consent for research participation. Patients with psychiatric disorders were excluded from the study because of their vulnerability and likely inability to provide free and informed consent. Patients with documented complications such as hypertensive heart failure and stroke and those with co-morbid conditions like diabetes mellitus were excluded to prevent potential confounders as their treatment regimen might be more complex.

Sampling Technique & Sample Size Determination:

The respondents were selected by systematic random sampling method. The sample size was determined using Fisher's formula [9]

$$n = (Z \propto)^2 \, X \, \frac{pq}{d^2}.$$

n = the desired sample size

$Z\alpha$ = 1.96 (standard normal deviate at 1.96 which corresponds to 95% confidence level)

P = medication adherence prevalence rate of 44.3% as reported by Ajayi et al. [10]

q = 1 - p

d = desired level of precision, text difference of 0.05

$$n = 1.96^2 X 0.443 X \frac{(1 - O.443)}{0.05^2}$$

$$n = 379$$

The total number of patients on follow-up for hypertension seen at the GOPC the previous year was 3218. Since the population size, N is less than 10,000, the desired sample size was calculated using the formula $n_{f=\frac{n}{1+\frac{n}{N}}}$ [155]

$n_{f=}$ Corrected sample size

n = Calculated sample size

N= Population size

$$n_{f=\frac{379}{1+\frac{379}{3218}}}$$

$$n_{f=\frac{379}{1.12}}$$

$$nf = 338.4 \approx 338.$$

An additional 10% attrition was added because of the possibility of some respondents dropping out of the study.

10% of 338=33.8

33.8+338= 371.8 ≈372

Therefore, 372 consenting adult hypertensive patients attending the GOPC of EKSUTH Ado-Ekiti were used for the study.

Study Instruments:

The instrument used was a semi-structured, three-sectioned interviewer-administered questionnaire; Section A-sociodemographic characteristics, section B-Medication belief assessment and Section C-Blood pressure control questions. Belief about antihypertensives was using the BMQ-specific scale of the Belief about Medicines Questionnaire.[11] The BMQ-Specific was used to measure patients' beliefs about medications prescribed for hypertension. The BMQ-specific has two subscales: The first subscale (BMQ-Specific necessity sub-scale) was used for assessing beliefs about the necessity of antihypertensive medications and the second (BMQ-Specific concern sub-scale) was used for assessing concerns about the potential adverse effects of taking the drugs. All items use a five-point Likert answer option varying from strongly agree which corresponds to "5" to strongly disagree which corresponds to "1". Higher scores indicate stronger beliefs about the corresponding concept in each subscale. A necessity-concern differential was then obtained by subtracting the concern score from the necessity score. A positive score indicates that the patient has stronger beliefs in the necessity of taking their antihypertensive medications relative to their concerns about the drugs and vice versa, while a score of zero indicates equal necessity and concern belief. [11] To maintain confidentiality, names of respondents were not used but serial numbers were allocated to the participants for easy identification. They were assured that their responses will be kept confidential. Only the author had access to the data.

Data Analysis:

All the data obtained were entered into the computer and analyzed using Statistical Package for Social Science (SPSS) version 25. The data were presented in tables, graphs and charts as appropriate. Descriptive statistics such as mean and standard deviations were determined. Estimates were expressed as either mean values (±standard deviation) for continuous variables or proportions (percentage) for categorical variables. Association between dependent and independent variables were compared using Pearson's Chi-square test and Fisher's exact test as appropriate. The level of statistical significance was taken as *p*-value equal to or less than 0.05.

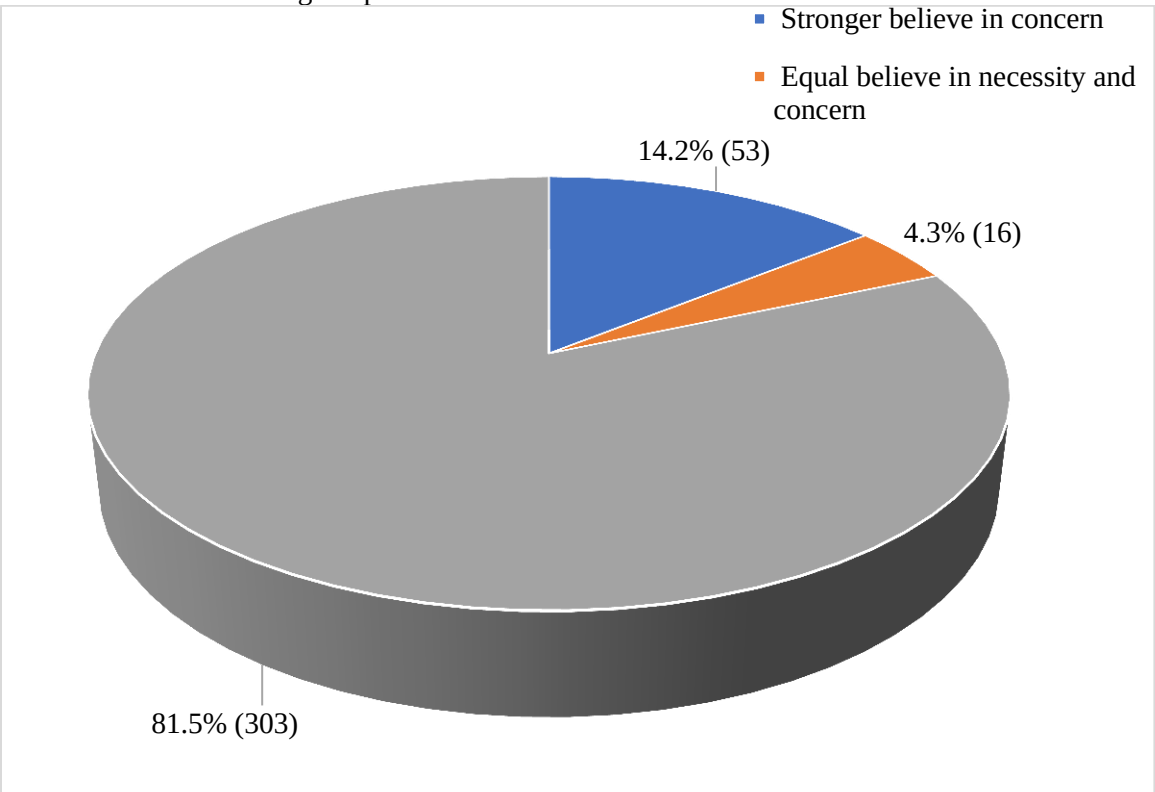
RESULTS:

Table 1: Demographic Characteristics of Respondents

Variable	Frequency (n = 372)	Percent (%)
Age (years)		
18 – 40	25	6.7
41 – 60	144	38.7
> 60	203	54.6
Mean ± SD (60.99 ± 12.19)		
Gender		
Male	109	29.3
Female	263	70.7
Marital Status		
Single	27	7.3
Married	231	62.1
Separated	6	1.6
Widowed	108	29.0
Religion		
Christianity	333	89.5
Islam	39	10.5
Ethnic Group		
Yoruba	349	93.8
Igbo	17	4.6
Hausa	6	1.6
Level of Education		
None	54	14.5
Primary	62	16.7
Secondary	67	18.0
Tertiary	189	50.8

Table 1 presents the demographic and socioeconomic characteristics of respondents. More than 60yrs of age (54.6%), female (70.7%), married (62.1%), practised Christianity (89.5%), Yoruba by ethnicity (93.8%), and half had tertiary education (50.8%).

Pattern of Medication Beliefs among Respondents



Over four-fifth (81.5%) of the respondents had stronger belief in the necessity of their antihypertensive medications, 14.2% had stronger concern belief while only 4.3% had equal necessity and concern beliefs (Based on necessity-concern differential score).

Table 2: Level of blood pressure control among the respondents

Variable	Frequency (n = 372)	Percent (%)
Blood pressure control		
Optimal	166	44.6
Suboptimal	206	55.4
Systolic BP		
Mean ± SD	139.26 ± 20.92	
Range	100.00 – 220.00	
Diastolic BP		
Mean ± SD	84.98 ± 13.18	
Range	60.00 – 130.00	

From table 2 above, overall control of blood pressure was optimal in less than half (44.6%) of the study participants. The mean systolic BP was 139.26mmHg ± 20.92 while the mean diastolic BP was 84.98mmHg ± 13.18.

Table 3: Relationship between Blood Pressure Control and Beliefs about Antihypertensive Medications

	BP categories				
	Optimal	Suboptimal	Total	χ^2	*p*-value
Pattern of medication belief	n (%)	n (%)	N		
Stronger belief in concern	19 (35.8)	34 (64.2)	53	2.030	0.362
Equal belief in necessity and concern	8 (50.0)	8 (50.0)	16		
Stronger belief in necessity	139 (45.9)	164 (54.1)	303		

χ^2: Chi square test; F: Fisher's exact test

There was no statistically significant relationship between blood pressure control and beliefs about medication (p=0.362).

DISCUSSION:

In this study, the majority (81.5%) of the respondents had a stronger belief in the necessity of their antihypertensive medications. This result corresponds with the findings of Adisa et al. study where more than 90% of their participants were found to have a strong

belief in the necessity of antihypertensive medications to control their high blood pressure.[12] The similarity with the result of this present study might be related to the fact that both studies assessed medication beliefs using the BMQ and both were among hypertensive outpatients in tertiary healthcare institutions. However, the findings in this study contrasted a Kenyan study by the duo of Otenyo and Kereri in which most of participants in their study were found to have higher concern belief about their antihypertensive medications.[13] The difference might not be unconnected with the relatively smaller sample size and varied socio-demographic characteristics and sampling technique of the cited work. Arbabshastan found that the majority of subjects were ambivalent in their belief about their hypertension medicines.[14] Compared to the results obtained in this present study, only 4.3% of the participants had equal necessity and concern beliefs about their antihypertensives.

With regards to overall blood pressure control, this study revealed that more than half of the respondents (55.4%) did not have their blood pressure controlled according to the JNC-8 recommended limits. This result is similar to Ojo et al. findings where 53.6% had uncontrolled blood pressure [15], and that of Abdallah findings in Egypt where 55% of hypertensive patients reported poor blood pressure control. [8] The low blood pressure control level noted in the current study constitutes a major challenge for the prevention of hypertension-related morbidity and mortality as it is widely known that reduction of blood pressure in hypertensive patients results in a decrease in cardiovascular complications and death, especially in high-risk patients.[16]

Nonetheless, this level of blood pressure control was higher than 39.7% found by Abene et al. in North Central Nigeria.[17] This difference might be related to the fact that the index study involved a relatively lower number of respondents. The level of blood pressure control reported in this present study was also much higher than 2.8% found by Adeloye et al. in a review of the prevalence, awareness, treatment, and control of hypertension in Nigeria. [18] This was attributed to the challenges in procuring and adhering to antihypertensive medications, poor follow-up and complex prescriptions. While Abdallah et al. [8] found a significant relationship between blood pressure control and specific beliefs about medicines in patients with hypertension, this study found no statistically significant association between them. Though there was a paucity of literature on this, it might be attributed to other factors that affect blood pressure control apart from medication beliefs such as physician inertia, dietary factors and financial constraints.

CONCLUSION:

The majority of the respondents had a stronger belief in the necessity of their antihypertensive medications, but the majority of the respondents had poor blood pressure control.

Recommendations:

1. Primary care physicians should explore the medication beliefs of patients with hypertension and develop therapeutic approaches that have a positive influence on beliefs about the necessity of antihypertensive medication as a means of improving adherence.
2. Healthcare providers should identify factors responsible for suboptimal blood pressure control and intensify antihypertensive therapy when necessary.

Limitations of the Study:

This was a hospital-based cross-sectional study, thus associations drawn might not be an absolute reflection of the outcome in the general population. In addition, medication belief and adherence were measured at a point in time; hence any changes in the trend of these variables over time could not be assessed. Furthermore, the instruments used for assessing belief about medicine and medication adherence were based on self-report and therefore prone to bias.

Ethical Approval: Approval to collect the study was collected with protocol number EKSUTH/A67/2020/05/006.

Data availability: The data the support the findings of this study are available from the corresponding author upon reasonable request.

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Conflicts of interest: None declared

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