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Association Between Illness Perceptions and Medication Adherence Among Adults with Hypertension Attending the General Outpatient Clinic, Federal Medical Centre, Gusau

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Abstract:

- ***Background:***

High blood pressure is a significant preventable risk factor associated with cardiovascular diseases, stroke, and chronic kidney disease. Medication non-adherence remains an important barrier to blood-pressure control, particularly in sub-Saharan Africa. Research findings regarding the association between illness perceptions and medication adherence remain inconsistent.

- ***Objective:***

To assess the association between illness perception and medication adherence among hypertensive patients attending the General Outpatient Clinic of Federal Medical Centre Gusau.

- ***Methods:***

This was a hospital-based cross-sectional study which included 138 hypertensive patients who have been taken medications for blood pressure control for a minimum of 3 months. Participants were selected by systematic random sampling. The Brief Illness Perception Questionnaire assessed participants' illness perceptions, and the 8-items Morisky Medication Adherence Scale was used to assess the medication adherence of the respondents.

The relationship between Perception of illness and antihypertensive medication adherence was assessed using Pearson's chi-square test.

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➢ ***Results:***

The participants has a mean age of 53.1 years (SD10.8); 8 (71.0%) were male; 99 (71.7%) had good illness perception, while 119 (86.2%) had poor antihypertensive medication adherence. About 86 (86.9%) of the respondents with high threat illness perception category ohad poor adherence. Illness perception and adherence level were not statistically significant. (Pearson $\chi^2 = 2.88$, p = 0.578, df = 4).

➢ ***Conclusion:***

The relationship between Illness perception and medication adherence was not statistically significant.

Keywords: *Hypertension; Illness Perception; Medication Adherence; Nigeria; Cross-Sectional Studies; Outpatients.*

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I. INTRODUCTION

High blood pressure substantially raises the risk of cardiovascular disease, stroke, heart failure, and chronic kidney disease. Although effective treatments are available, blood-pressure control remains inadequate in many low- and middle-income settings. A meta-analysis of more than 34,000 hypertensive in African sub region put the pooled rate of medication non-adherence at 43.9%, though figures varied across settings.[1]In a Nigerian community study, patients identified forgetfulness, financial constraints, pill burden and adverse effects among the factors affecting sub- optimal blood pressure for poor antihypertensive medication adherence [2].

Illness perception describes the beliefs people hold about a condition, including its identity, causes, expected duration, consequences and controllability, as well as their emotional responses. The Common-Sense Model proposes that these representations inform coping responses and health behaviour [3,4] However, findings on the relationship between illness and medication adherence remain inconsistent. A study in Ekiti State, Nigeria, reported a significant association [5], In contrast, a study conducted in Lagos found no statistically relationship between perception illness and medication adherence among the participants.[6]. Research from South Africa and Indonesia suggests that associations may vary across individual illness-perception domains [7,8].

Understanding hypertension may not, by itself, ensure consistent medication use, because practical, treatment-related and health-system barriers can also affect medication adherence. Studies from Port Harcourt, Ethiopia and Kenya have reported associations involving selected illness-perception dimensions or medication beliefs [9,10,11]. In this context, the present study examines relationship between perception of an illness and Adherence to antihypertensive medication adherence among the respondents attending GOPC of FMC Gusau. The findings may inform the development of protocols for the management of hypertension in primary care settings.

II. MATERIALS AND METHOD

➢ *Design of the Study*

This hospital-based cross-sectional study took place at the General Outpatient Clinic of the Federal Medical Centre (FMC) in Gusau, Zamfara State, in northwestern Nigeria.

➢ *Participants and Sampling*

All participants recruited for the study were adults aged 18 and above, diagnosed with hypertension, receiving antihypertensive therapy for at least three months, and not requiring urgent medical attention. We recruited 138 participants using systematic random sampling.

We estimated the sample size using the Lesli Kish formula, $n = Z^2p(1-p)/d^2$, with $Z = 1.96^2$ at a 95% confidence level and an anticipated prevalence of good adherence to antihypertensive medication of 8.9% (p = 0.089), as reported by Adisa et al. in a study conducted in northwestern Nigeria.[12]

A precision of 5% (d = 0.05). Accordingly, $n = (1.96)^2 \times 0.089 \times 0.911/(0.05)^2 = 124.6$, rounded up to 125. Allowing an additional 10% for incomplete responses (12.5), this is 125 + 12.5, approximately 138 participants.

➢ *Ethical Approval and Considerations*

Approval to conduct the study was obtained from the Research and Ethics Committee of FMC Gusau.

- *Confidentiality*

Participants provided informed consent before taking part in the study. They were informed of their right to withdraw at any time without affecting their medical care.

➢ *Data Collection and Measures*

A semi-structured questionnaire was utilised to obtain respondents' sociodemographic and clinical data. Brief Illness Perception Questionnaire (Brief IPQ) was used to obtain the illness perception of the respondents. [13] The questionnaire consists of eight scored items, each rated from 0 to 10, producing a grading ranging from 0 to 80. There is a reversal score of items 3,4, and 7 before calculating the total

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score. Higher scores indicated a more threatening perception of illness.

The classification was low perceived illness threat (0–41), moderate perceived illness threat (42–49), and high perceived illness threat (50–80). The Cronbach's alpha for the BIPQ is 0.9, indicating excellent test-retest reliability and validity.[13]

The 8-item Morisky Medication Adherence Scale was used to measure respondents' medication adherence[14]. It has 7 items. The yes/no items: each yes response receives one point, while a no response receives 0 points. It also includes one item with a 5-point Likert scale arranged from never to always. The response 'never' receives 1 point, while the remaining responses receive 0 points. This scale has a grading range of 0 – 8. A grade of 8 indicates good adherence to medication, while a score of 6-7 indicates that adherence to medication is moderate and a score of 0- 5 indicates poor medication adherence. The scale is reliable, with a Cronbach's alpha coefficient of 0.7 indicating good internal consistency. [14]

We measured respondents' BP using a mercury sphygmomanometer and a Littmann stethoscope. The research assistant number one (a registered nurse) measured blood pressure after the participant rested for 5 minutes, using an Accoson sphygmomanometer and a Littmann stethoscope. The participant's left arm was supported at mid-sternum (heart) level, and the sphygmomanometer was kept at the assistant's eye level to avoid parallax error. The cuff was applied and inflated until the earlier palpated radial pulsation disappeared. The cuff was then deflated slowly; the systolic BP was recorded at a point when the radial pulsation reappeared. The cuff was re-inflated to 20 mmHg above that estimate and deflated at about 2 mmHg per second. We recorded both systolic and diastolic BP values after hearing the first and fifth Korotkoff sounds. After a further 5-minute interval, we took a second reading and recorded the mean of the two readings as the participant's blood pressure for that day. Blood pressure < 140/90 mmHg is considered optimal blood pressure control, while blood pressure> 140/90 mmHg is considered suboptimal blood pressure control.

➢ *Statistical Analysis*

We analysed the data using International Business Machine Statistical Package for Social Science version 27. We summarised categorical sociodemographic and clinical characteristics using frequencies and percentages. We summarised the distributions of illness-perception and medication-adherence categories using bar charts, while blood pressure control was summarised using a pie chart. The association between illness-perception category and medication-adherence category was assessed using Pearson's chi-square test, and the level of significance was set at $p < 0.05$.

III. RESULTS

➢ *Sociodemographic and Clinical Profile of the Respondents*

Table 1 presents the demographic and clinical profile of the 138 respondents, including highest level of education, family history of hypertension, age, sex, employment status, and the number of antihypertensive medications taken daily.

Table 1 Demographic and Clinical Profile of the Respondents (n = 138)

Variable	Frequency (n)	Percentage (%)
Age categories		
≤40	16	11.6
41-50	41	29.7
51-60	51	37.0
>60	30	21.7
Sex		
Male	98	71.0
Female	40	29.0
Employment status		
Civil servant	70	50.7
Business	38	27.5
Farming	5	3.6
Unemployed	25	18.1
Highest level of education		
None	4	2.9
Qur'anic education only	21	15.2
Primary	6	4.3
Secondary	30	21.7
Tertiary	77	55.8
Family history of hypertension		
Yes	70	50.7
No	68	49.3
Number of antihypertensive drugs taken daily		
One	23	16.7

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Two	83	60.1
More than two	32	23.2

Mean Age ± Standard Deviation: 53.1 ± 10.8 Years.

- *Level of Blood Pressure Control*

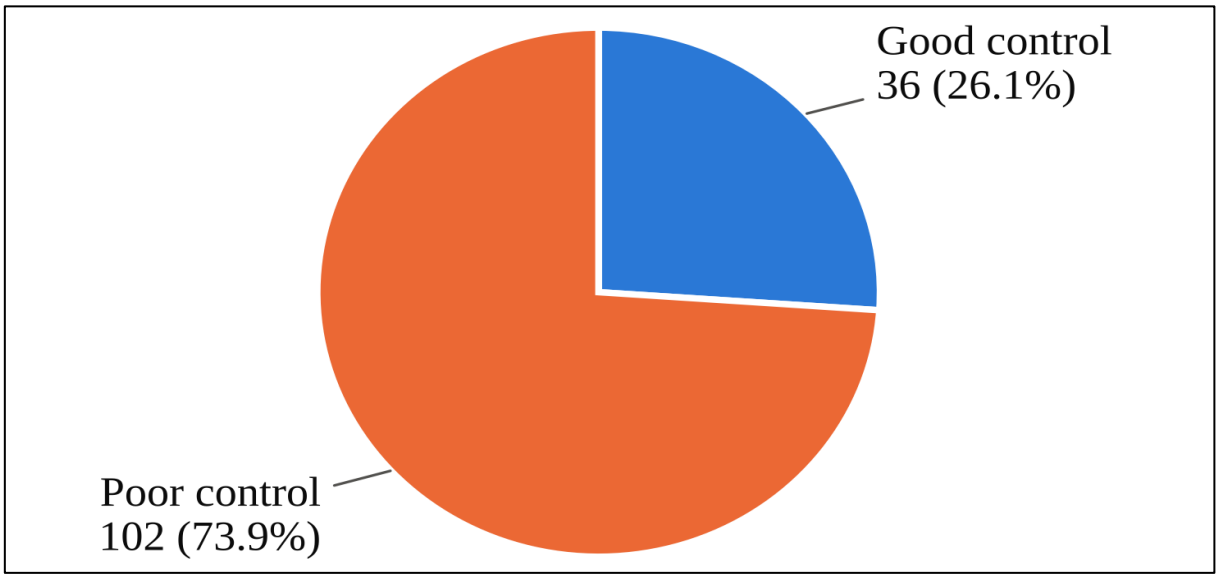


Fig 1 Shows that 36 (26.1%) Respondents had Optimal Blood Pressure Control and 102 (73.9%) had Poor Control.

- *Level of Illness Perception*

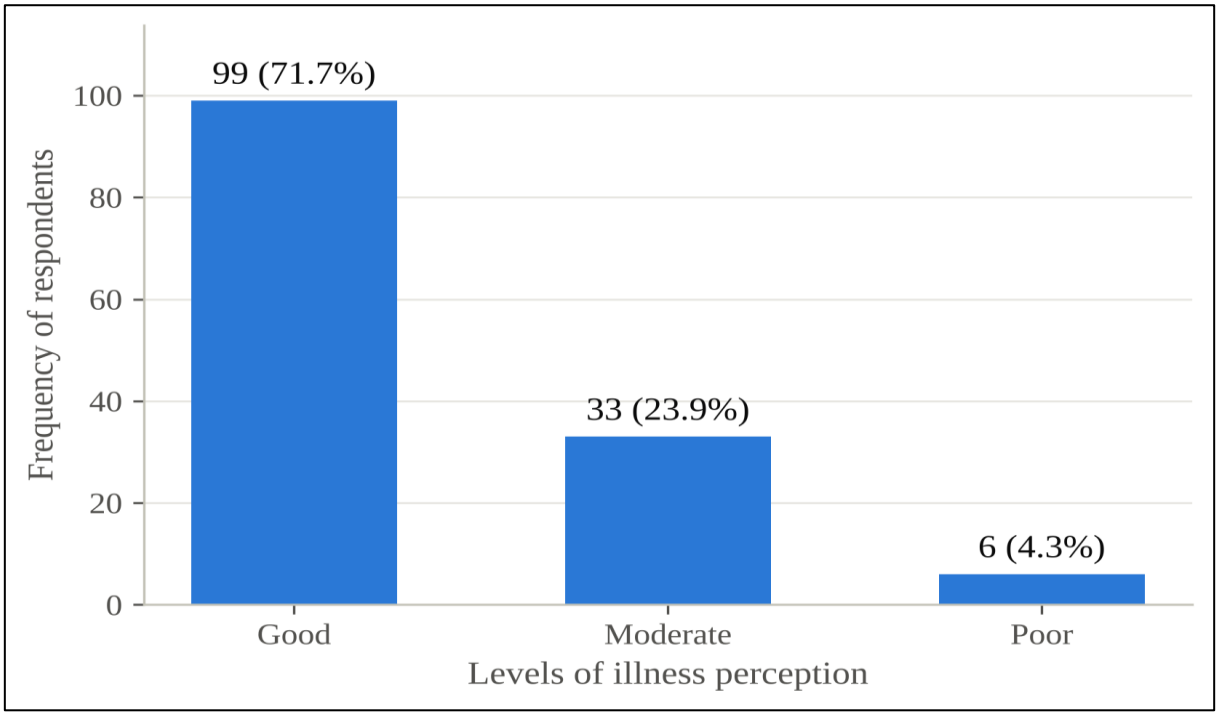


Fig 2 Distribution of Illness Perception Among Respondents (n = 138).

➢ *Medication Adherence Level*

In Figure 3 below, of the 138 respondents, 6 (4.3%) had good medication adherence, 13 (9.4%) had moderate adherence, and 119 (86.2%) had poor adherence.

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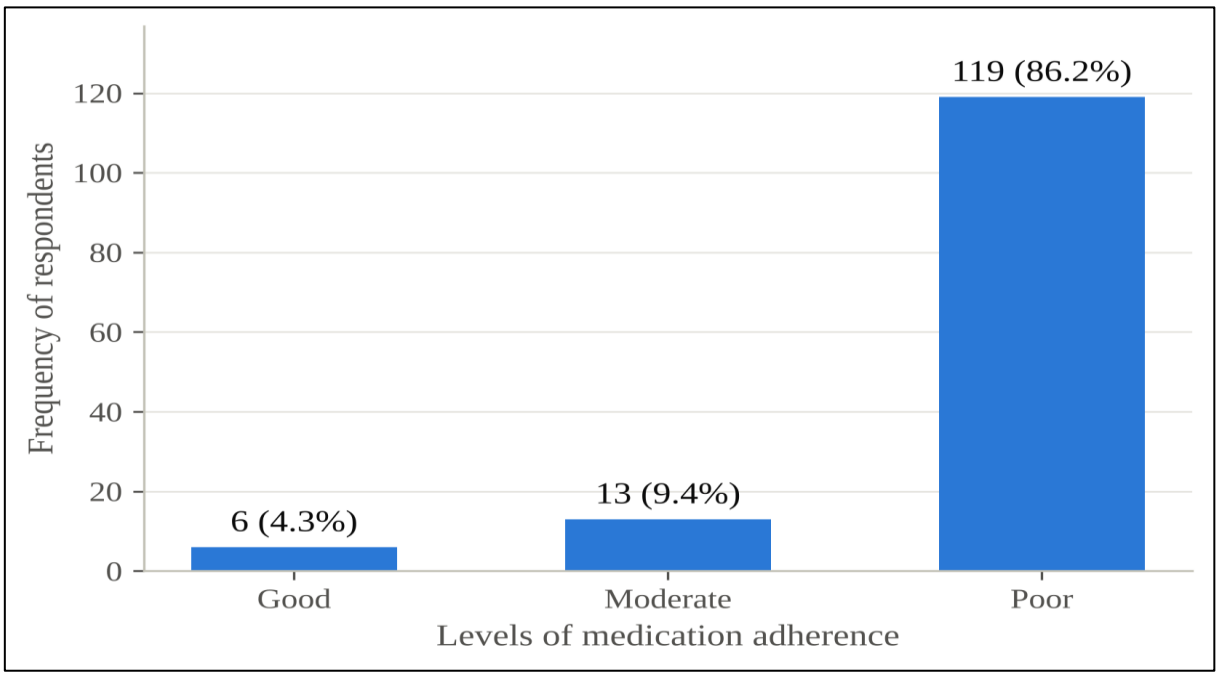


Fig 3 Medication Adherence Level

➢ *Association Between Perception of Illness of Respondents and Medication Adherence*

About 99 participants (86.9%) of the respondents had poor adherence to medication in the high perceived illness threat category, 33 (87.9%) in the moderate category, and 6 (66.7%) in the low category. The perception of illness and adherence to medication of the respondents were not statistically significant ($\chi^2 = 2.88$, df = 4, p = 0.578).

Table 2 Cross-Tabulation of Illness-Perception and Medication-Adherence Categories (n = 138)

Illness perception	Good adherence	Moderate adherence	Poor adherence	Total
High illness threat	4 (4.0)	9 (9.1)	86 (86.9)	99 (71.7)
Moderate illness threat	1 (3.0)	3 (9.1)	29 (87.9)	33 (23.9)
Poor illness threat	1 (16.7)	1 (16.7)	4 (66.7)	6 (4.3)
Total	**6 (4.3)**	**13 (9.4)**	**119 (86.2)**	**138 (100)**

IV. DISCUSSION

Among the 138 patients with hypertension included in this cross-sectional study, no statistically significant relationship was observed between illness perception and medication adherence. Poor medication adherence was recorded in 86.2% of the partiscipants, and they had high illness threat perception. There was no statistically significant relationship between illness perception and medication adherence. p = ($\chi^2 = 2.88$, df = 4, p = 0.578). This study's findings are similar to the Lagos study of 65 patients by Okafor and colleagues, which shows no statistically significant association between individuals' perceptions and knowledge of hypertension and their adherence to prescribed medication.[6] The study conducted in Lagos also described missed doses and treatment discontinuation when participants felt better, suggesting that knowledge by itself may not sustain daily medication use. In a small rural South African study, Peltzer and colleagues found that most illness cognitions were not significantly related to adherence to medication. However, adherence to medication was related with perceived stress and the perception that hypertension is an incurable condition.[7]. A study in Indonesia also reported domain-specific associations, with treatment control, understanding of hypertension and emotional response associated with non-adherence, while other domains were not [8]. These outcomes suggested that analyzing broad categories may obscure relationships between beliefs/ perceptions of illness and adherence to medication among respondents.

Several researches have reported positive domain-specific associations. Afolayan and colleagues reported a statistically significant association between illness perception and medication adherence among 381 patients attending a teaching hospital in Ekiti State (p = 0.003) [5]. In Port Harcourt, Ozumba and colleagues reported differences in Brief IPQ dimensions and medication beliefs between adherent and non-adherent patients [9]. A multicenter study in Ethiopia linked medication adherence to perceived illness consequences and severity [10]. In contrast, a study in Kenya reported associations with perceived personal control and emotional representation, but not with all illness-perception domains. [11] Studies from Iran, Taiwan and the USA have also demonstrated associations, sometimes limited to dimensions [15,16,17,18,19,20,21].

Variations across studies may be explained by sample size, measurement instruments, scoring thresholds, study populations and the illness-perception domains examined. The Ekiti study enrolled 381 participants, compared with 138

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in the present study, and both authors used an adapted Brief IPQ and the 8-item Morisky scale. [5.] Its larger sample in the Ekiti study may have had greater statistical power than the present study. However, sample size alone may not account for the observed difference. The Indonesian study used a different adherence measure [8], which also limits direct comparison. Analyses of individual domains may reveal associations that are obscured when scores are grouped into broad categories. Nigerian research on explanatory models of hypertension further indicates that personal experiences and treatment context 22 shape patients' interpretations. Researchers should account for these variations when interpreting cross-study comparisons.

Patients may understand the long-term risks of hypertension yet face medication costs, transport expenses, medication stock-outs, adverse effects, complex regimens or competing household needs. Nigerian research has identified forgetfulness, financial constraints, pill burden and side effects as barriers to adherence [2]. The study found that concerns regarding medications were associated with lower adherence, while stronger beliefs about the necessity of treatment were linked to better medication adherence.[23] In Ethiopia, adverse effects such as tiredness and muscle pain were related to non-adherence, and a study across 12 sub-Saharan African countries identified poor adherence as a barrier to blood-pressure control.[24,yyyu 25].

High blood pressure can be asymptomatic, and some patients may interpret feeling well as a reason to stop treatment. In the Lagos study, more than two-thirds of participants reportedly had stopped medication because they occasionally felt better. [6] Other patients may recognise hypertension as a chronic and serious problem but remain concerned about medicine-related harm or the need for long-term treatment. Qualitative research in Nigeria has documented varied explanatory models of hypertension, while research in Malawi described cost and health-system obstacles among patients living with hypertension and HIV.[22],[26.] Evidence from Ethiopia also indicated that support from family may be related with adherence [10]. Collectively, these studies suggest that illness beliefs, practical circumstances and social support can shape adherence.

In clinical practice, directly exploring adherence barriers is important, rather than assuming poor adherence reflects limited knowledge. Counselling can explain why treatment is usually needed even in the absence of symptom, allowing patients to raise concerns without blame. Support can then be tailored to the barrier identified. Considering family involvement, with the patient's agreement, can help improve medication adherence. These are practical implications informed by the wider literature and the high prevalence of poor adherence in this sample.

This index study from 138 patients attending a General Outpatient Clinic in Gusau, North West Nigeria; the findings are consistent with previous studies that found no statistically significant association between illness perceptions and medication adherence among respondents.

➢ *The Study Constraints*

The cross-sectional study design does not allow the establishment of causal relationships.

V. CONCLUSION

Among 138patients with hypertension attending the General Outpatient Clinic of FMC Gusau, illness perception was not significantly associated with medication adherence. ($\chi^2 = 2.88$, df = 4, p = 0.578). Poor adherence was recorded in 86.2% of participants and in 86.9% of those assigned to the category labeled as having good illness perception. The results support assessing practical, treatment-related and health-system barriers alongside patients' understanding and beliefs about hypertension.

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