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ORIGINAL ARTICLE

Illness Perceptions and Adherence to Medication Regimen among Hypertensive Patients Attending a County Referral Hospital in Kenya

Salome Oyiela Otenyo and *Deborah Kemunto Kereri*

Department of Nursing, Egerton University, Nakuru, Kenya

*Corresponding author: *Salome Oyiela Otenyo, Department of Nursing, Egerton University, P.O Box 536 Egerton, Kenya, Tel: 254-723-161-806*

Abstract

Background: Although various factors have been investigated across hypertensive patients to try to explain the factors that affect medication adherence, the role of illness representations among the Kenyan hypertensive population is still unclear. This study aimed at investigating the influence of illness representation on medication adherence among hypertensive patients attending a County Referral Hospital in Kenya.

Methods: A Quantitative research design, utilizing a simple random sampling method was adapted. The Brief Illness Perception Questionnaire (BIPQ) was utilized. Bivariate analysis was conducted using Chi square test and the Mann Whitney U test while multivariate data analysis was conducted using Binary logistic regression analysis.

Results: Data from 96 participants, 55% female and 58% being over the age of 65 years were analyzed. 33.3% of the respondents had a high adherence level. None of the socio-demographic variables were found to be statistically significant to medication adherence using Chi square test analysis. Stronger attitudes of personal control was significantly related to medication adherence p = 0.009 (OR = 0.271; CI = 0.102-0.0718), whereas weaker perceptions of emotional representation was found to be a predictor of adherence p = 0.004 (OR = 2.900; CI = 1.413-1.595).

Conclusion: Health workers should formulate interventions to facilitate perceptions of personal control and reduce perceptions of emotional representations, in order to promote adherence as informed by the findings of this study.

Keywords

Adherence, Hypertension, Antihypertensive, Illness perceptions

Introduction

Hypertension is now the most common cardiovascular problem in Africa, and it's estimated that more than 20 million people are affected, with a reported prevalence of hypertension in Africa ranging from 25% to 35% in adults [1]. According to the Africa Population and Health Research Centre (APHRC) Kenya like the rest of the World is facing a crisis in the health sector as more and more patients are being diagnosed with high blood pressure and other heart ailment. According to the World Health organization [2], 12.5% people in sub-Saharan Africa die from cardiovascular diseases compared to deaths caused by HIV/Aids at 12.3% or malaria at 7.3%.

Despite the high prevalence of high blood pressure, previous studies have also shown poor blood pressure control in Kenya. In a study done in a rural area 2.6% of patients on treatment were reported to have their blood pressure under control [3]. Another study done in an urban referral hospital showed that only 26% of patients on out-patient follow up had their blood pressure controlled [4]. In addition a study done in a referral hospital in Central Kenya, the results showed that only 33.44% of the patients on out-patient follow up had their blood pressure controlled [5]. Moreover, a study done among a transitional community only 29% of the patients receiving hypertension treatment had their blood pressure controlled [6]. Data from this studies show that despite patients being diagnosed with hyper-

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tension and started on hypertension medication still the level of blood pressure control in Kenya is low.

Antihypertensive medications are the most common drugs that hypertensive patients are prescribed for lowering their blood pressure [7].

Despite availability of the antihypertensive medication whose effectiveness has been proven in the treatment of hypertension and has significantly shown to reduce the risk of cardiovascular illness, the reported rates of blood pressure control are very low [8].

Patients diagnosed with chronic diseases such as hypertension, are strongly required to adhere with their prescribed treatment regimen, a lack of adherence with antihypertensive medication is a major reason for poor control of hypertension [9].

Several theoretical models have been developed to explain associations between psychological factors and health related behavior in general and adherence behavior specifically [10,11]. The model most often discussed in relation to patient adherence is Leventhal's Self-Regulatory Model (SRM). According to the extended version of the self-regulatory model, when individuals face a health threat, they form both cognitive and emotional representations of the disease, which act in parallel to influence associated health behaviors. Cognitive representations comprise of beliefs on illness identity, antecedent causes, consequences, timeline and cure control. Whereas the emotional representations comprise individual emotional reaction to the disease [10].

However, this relationship has not been established in the Kenyan hypertensive population hence this study sought to find out the relationship between illness representation and medication adherence among hypertensive patients attending a County Referral Hospital in Kenya.

Materials and Methods

Adescriptive quantitative cross-sectional survey was adopted, including 100 hypertensive patients who were seen at the Nakuru County Referral Hospital hypertension outpatient clinic. There were 300 hypertensive patients registered at the outpatient clinic, who are given an appointment every month. The clinic operates once every week and an average of 80 patients attend weekly.

Due to impracticability of selecting every hypertensive patient visiting the facility, the study adopted a sample using the Yamane Model [12] to get the study respondents.

$$n = \frac{N}{1 + N(e^2)}$$

So the sample size was 100 respondents, this will enable the researcher to have at least a response rate of 50% using power calculation.

The respondents were then selected using simple random sampling technique using patients register at the Nakuru County Referral Hospital hypertension out-patient clinic as the sampling frame. The researcher approached the identified patients during their appointment days and explained to them that they had been selected to participate in a study. Each of the participants was then informed about the study, its objectives and the method of data collection.

The patients were then given the participants information sheet and allowed to go home with it, so that they could read through it again before they decide to participate in the study.

They would then inform the researcher of their decision during their next appointment, the patients who inform the researcher of their willingness to participate in the study would be given time to see their clinician and get their medication refill before being interviewed. The researcher utilized a structured questionnaire which compromised previously validated brief illness perception questionnaire. Ethical clearance was sought from university of Dundee ethical review board and the ethical committee of the Nakuru County Referral Hospital before study commenced.

Data Analysis

Data was screened and cleaned to ensure accurate data entry. Statistical data analysis was then done using SPSS software program version 20. Descriptive analysis was carried out and categorical data were expressed as mean, standard deviation, frequency and percentages. Associations between demographic variables and level of adherence were tested using Pearson's Chi Square test while associations between illness perception and medication adherence level were assessed with Mann-Whitney U test. Binary logistic regression was conducted using variables that showed a p value ≤ 0.05 in univariate analysis. Statistical significance for all the analyses was set to be p ≤ 0.05.

Results

Socio-demographic characteristics

A total of 33.3% (n = 32) had a high adherence while 66.7% (n = 64) had low adherence. Univariate analysis was done using Chi square test to determine the relationship between high and low adherence with individual socio-demographic variables. The results showed that there were no significant relationships between socio-demographic variables and adherence (Table 1).

Participant's hypertension illness perception

The participant's hypertension illness perceptions were measured using the Brief Illness Perception Questionnaire (BIPQ). Higher scores on the Consequences, Timeline, and Identity and Emotional representations subscales shows that the patients' beliefs about the

number of symptoms attributed to their illness, the chronicity of the condition, the negative consequences of the illness and the cyclical nature of the illness. While high scores on the Personal control, Treatment control, Concerns and Illness comprehensibility shows that the patient has positive beliefs about the controllability of the illness and a personal understanding of the condition.

Table 1: Socio-demographic characteristics of participants.

Variable	Total (n = 96%)
Age (years)	
< 65	40 (42)
≥ 65	56 (58)
Gender	
Male	43 (45)
Female	53 (55)
Marital status	
Married	63 (66)
Single/Divorced	33 (34)
Education level	
< Secondary education	72 (75)
≥ Secondary education	24 (25)
Occupation	
Government employed	37 (39)
Self/Unemployed	59 (62)

Table 2: Participants perception about their hypertension illness; results from the Brief illness perception questionnaire (BIPQ).

Variable	Scores (1-5) n%	Scores (5-10) n%
Consequences	53 (55)	43 (45)
Timeline	43 (45)	53 (55)
Personal control	33 (34)	63 (66)
Treatment control	13 (14)	83 (86)
Identity	63 (65)	33 (35)
Concerns	21 (22)	75 (78)
Illness comprehensibility	37 (39)	59 (61)
Emotional response	61 (64)	35 (36)

Higher scores 5 to 10 on the brief Illness Perception Questionnaire (BIPQ) translates to a more threatening view of hypertension illness. The study revealed that 45% of the patients felt that hypertension severely affects their life (Consequences) while 55% felt that hypertension had no effect at all to their life. 55% of the patients believed that their hypertension illness will continue forever (Timeline), while 66% felt that they had extreme amount of control (Personal control) and 86% felt their hypertension treatment was extremely helpful in controlling their hypertension illness (Treatment control). 35% of the patients reported to have many severe symptoms of hypertension (Identity) while 65% reported to have no symptoms at all. 78% of the respondents reported that they were extremely concerned about their hypertension illness.

Majority of the patients 61% reported that they understand their hypertension illness very clearly (Comprehensibility) while 39% didn't understand at all and only 36% reported that their hypertension illness extremely affected them emotionally (Table 2).

When adherent groups were arranged according to their response to the Illness Perception Questionnaire, there was evidence of a difference between respondents' scores in the Personal Control and the Emotional representation subscale. The Personal Control subscale compared to the adherent groups, mean scores were higher in the high adherent group relative to the low adherent group (Mean by adherence level; Low = 39.91, High = 52.80; z = -2.190; p = 0.029). On the Contrary higher mean scores of the Emotional representation subscale was observed among low adherent group relative to the high adherent group (Mean by adherence level; Low = 54.05, High = 45.73; z = -1.435; p = 0.010) (Table 3).

Independent factors associated with adherence

In multivariate analysis, using Binary logistic regression to analyze the impact of illness Representation on adherence, stronger attitudes of Personal Control of the illness was related to having high adherence to antihypertensive medication (odds ratio: 0.271, p = 0.009;

Table 3: Illness perception by adherence level.

Variable	Adherence	Level	z score	p-value
	Low adherence	High adherence		
	Mean	Rank		
Consequences	48.86	47.78	-0.187	0.852
Timeline	47.05	49.23	-0.371	0.710
Personal control	39.91	52.80	-2.190	**0.029**
Treatment control	46.96	51.58	-0.794	0.427
Identity	50.31	47.59	-0.474	0.636
Concern	51.63	42.25	-1.584	0.113
Comprehensibility	46.88	49.31	-0.412	0.680
Emotional representations	54.05	45.73	-1.435	**0.010**

Table 4: Independent factors associated with adherence.

Statement	β	S.E	Wald test	p-value	Odds ratio (O.R)	95% C.I	
						Lower	Upper
Personal control	-1.307	0.498	6.885	0.009	0.271	0.102	0.718
Emotional response	1.065	0.367	8.429	0.004	2.900	1.413	1.950

C.I (0.102-0.718). Weaker attitude of emotional representations was related to having high adherence to antihypertensive medication (odds ratio: 2.900, p = 0.004; C.I (1.413-1.595) (Table 4).

Discussion

Adherence to antihypertensive medication

The results showed that majority of the respondents exhibited low adherence (66.7%) while only a handful of respondents exhibited high adherence (33.3%). The proportion of patients with high adherence was too low for this population bearing in mind that the patients were already diagnosed, started on hypertensive medication and visiting a health care facility; these rates indicate a significant problem given all the known complications that are related to uncontrolled hypertension. In a study done in a Referral hospital in Central Kenya, only 33.4% of patients attending Outpatient hypertension clinic had their blood pressure within the recommended limits [5], this could be a reflection of patients in this region not adhering to their prescribed hypertension medication thus making them have uncontrolled blood pressure.

The results were similar to those reported at Kenyatta National Hospital Hypertension outpatient clinic [4], where only 31.8% of the patients had high adherence. However other studies found a higher adherence rate of 69%, 63%, and 53.3% [13-16]. These variations could be due to patient's socio-demographic characteristics of the various countries, adherence measurement tool that was used, study design, study population and patients self-care behavior.

Illness representation and Antihypertensive medication adherence

The results in this study show high beliefs of personal control is statistically significant to medication adherence. This was in contract with studies that found patients with lower personal control beliefs reported higher levels of adherence [17-21]. These results seem inconsistent with regard to self-efficacy whereby a patient with a higher self-efficacy is expected to have better self-regulatory behaviors.

A lower emotional representation was statistically related to medication adherence in this population. Similarly other studies also found less negative emotional responses to hypertension to be statistically related to medication adherence [17,21-23]. These findings could be attributed to low negative feelings such as sadness, anger, and fear towards their hypertension illness. Hence they are more likely to adhere to their anti-hypertension medication, unlike negative emotions of the illness may distress the patients thus making them not to deal with the condition.

No significant associations between Illness identity and medication adherence were found. Similarly [22,24] also found no significant relationship between identity and medication adherence. This finding could be as a result of these patients having comorbidities that they are likely not to have identified the symptoms listed as a result of their hypertension illness but rather as a result of their comorbid condition also it could be because of low knowledge about their hypertension illness and symptoms associated with their hypertension illness. Conversely [23,25] found a significant relationship between illness identity and medication adherence.

Timeline was found not to be statistically significant to medication adherence, although it's a presumption that when an illness is viewed as chronic then the patient might be more adherent to their medication because it is regarded as essential, these patients maybe could be lacking the knowledge about the nature of their illness thus not viewing it as chronic making them not to be serious with adherence to treatment. Likewise [23] did not find a relationship between timeline and hypertension medication adherence. Nonetheless [17,18,26,27] found a significant relationship between timeline and adherence.

The findings of this study showed that treatment control did not significantly relate with medication adherence. This means that patients' perception of the effectiveness of their hypertension treatment did not relate with their adherence to the recommended treatment. Patients' adherer to their anti-hypertension medication because they believe that it would cure rather than control. Another possible explanation is that they felt that their taking medication was within their control but rather controlled by the prescriber. Similarly [23] found no significant relationship. These findings were contrary to those of [16,17,19,22,24,26,27] who found treatment control to be statistically significant to patient's medication adherence, that is, patients who has higher beliefs that treatment is effective to help manage their condition took their medication, because they expect or believe that their medication is useful in managing their condition.

• In this study illness consequence was not statistically significant to medication adherence, this could mean that the patients were not aware of the possible

consequences that non adherence would have to their health. However [17,23-26] found higher illness consequences to be a predictor of medication adherence. This difference could be also as a result of differences in illness experience among respondents' in the different studies.

In this study, patients' understanding of their hypertension illness did not relate with their adherence to their prescribed medication. However [17,26,28,29] found illness coherence to be a positive predictor of antihypertensive medication adherence. This difference could be because of patients' knowledge about their illness and medication.

Study limitations

The potential to generalize the study findings is limited due to the use of only one study site thus only patients who attended the outpatient hypertensive clinic and were also willing to take part in the study were included. Although this study used well-validated questionnaires, the use of self-report data is a possible limitation because self-reported data are subject to recall bias. However, the participants were encouraged to be accurate in reporting the information during data collection.

By selecting the participants in a hospital setting, the results of this study may overestimate the rate of adherence as all participants do have a higher degree of awareness of their hypertension condition compared to the general population. Since this was a cross-sectional study it couldn't show causative relationship between illness representations and adherence to medication.

Conclusion

In this study, personal control and emotional representations were found to be significantly related to medication adherence. Based on the findings from the current study, future studies should assess the cause dimension of the illness perception which was not measured in this study in order to have a picture as to whether the hypertensive patients are aware of the cause of their illness or their beliefs of the causes of their illness and how it predicts adherence. To increase generalizability of the findings, further studies should have a larger sample size with multiple study sites. Qualitative studies can also be done to have an in-depth exploration of how the various illness perception affect adherence.

What is Already Known on this Topic?

- Patients with hypertension do have a problem to adherence to their medication regimen, and it's often associated with the long term therapy.

- Illness representations do affect patient's adherence to medication either positively or negatively.

What the Study Adds

- This study has identified socio-demographic factors that are associated with poor adherence to long term therapies which is useful in formulating interventions aimed at improving adherence to antihypertensive medication.

- The study has highlighted the role of illness representations related to hypertensive medication adherence and this will form the basis of incorporating assessment of the illness representation dimensions into antihypertensive patients individualized treatment plans at the initial stage of diagnosis in order to encourage adherence.

Competing Interests

The Author declares no competing interests.

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References

1. Joshi MD, Ayah R, Njau EK, Wanjiru R, Kayima J, et al. (2014) Prevalence of hypertension and associated cardiovascular risk factors in an urban slum in nairobi, kenya: A population-based survey. BMC Public Health 14: 1177.

2. World Health Organization (2011) Global status report on non communicable disease 2010: Description of the global burden of NCDS, their risk factors and determinants, Italy.

3. Hendricks ME, Wit FW, Roos MT, Brewster LM, Akande TM, et al. (2012) Hypertension in sub-saharan africa: Cross-sectional survey in four rural and urban communities. PLoS One 7: e32638.

4. Achieng L, Josh MD, Ogola EN, Karari E (2009) Adequacy of blood pressure control and level of adherence with antihypertensive therapy. East African Medical Journal 86: 11-15.

5. Mutua EM, Gitonga MM, Mbuthia B, Muiruri N, Cheptum J, et al. (2014) Level of blood pressure control among hypertensive patients on follow up in a regional referral hospital in central kenya. Pan Afr Med J 18: 278.

6. Mathenge W, Foster A, Kuper H (2010) Urbanization, ethnicity and cardiovascular risk in population on transit in nakuru, kenya: A population - based survey. BMC Public Health 10: 569.

7. Sharifirad G, Tol A, Siamak M, Matlabi M, Shahnazi H, et al. (2013) The effectiveness of nutrition education program based on health belief model compared with traditional training. J Educ Health Promot 2: 15.

8. Kamran A, Ahari S, Biria M, Melepour A, Heydari H (2014) Determinants of patients' adherence to hypertensive medications: Application of health beliefs model among rural patients. Ann Med Health Sci Res 4: 922-927.

9. Al-Ramahi R (2013) Patterns and attitudes of self-medication practices and possible role of community pharmacists in palestine. Int J Clin Pharmacol Ther 51: 562-567.

10. Tsiantou V, Pantzou P, Pavi E, Koulierakis G, Kyriopoulos J (2010) Factors affecting adherence to antihypertensive medication in greece: Results from a qualitative study. Patient Prefer Adherence 4: 335-343.

11. Jamous R, Sweileh W, Taha A, Zyoud S (2014) Beliefs

about medicines and self-reported adherence among patients with chronic illness: A study in palestine. J Family Med Prim Care 3: 224-229.

12. Yamane T (1967) Statistics: An introductory analysis. (2rd edn), Harper and Row, New York.

13. Moss-Morris R, Weinman J, Petrie K, Horne R, Cameron L, et al. (2002) The revised illness perception questionnaire (IPQ-R). Psychology and Health 17: 1-16.

14. Fernandez-Arias M, Villaorduna A, Miranda J, Diez-Canseco F, Malaga G (2014) Adherence to pharmacotherapy and medication related beliefs in patients with hypertension in lima, Peru. PLoS One 9: e112875.

15. Lo SH, Chau JP, Woo JM, Thompson DR, Choi KC (2016) Adherence to antihypertensive medication in older adults with hypertension. J Cardiovasc Nurs 31: 296-303.

16. Rajpura J, Nayak R (2014) Medication adherence in a sample of elderly suffering from hypertension, evaluating the influence of illness perceptions, treatment beliefs and illness burden. J Manag Care Pharm 20: 50-65.

17. Joho AA (2012) Factors affecting treatment compliance among hypertension patients' in three district hospitals - Dar es salaam. Master's Thesis, Muhimbili University of Health and Allied Sciences.

18. Ambaw A, Alemie G, Meseret S, Mengesha Z (2012) Adherence to antihypertensive treatment and associated factors among patients' on follow up at university of gondar hospital, North West Ethiopia. BMC Public Health 12.

19. Lee GK, Wang HH, Liu KQ, Cheng Y, Morisky DE, et al. (2013) Determinants of medication adherence to antihypertensive medications among a chinese population using morisky's medication adherence scale. PLoS One 8: e62775.

20. Yeom M (2016) Influence of illness representation on self-management behaviors in korean hypertensive patients. Journal of Nursing and Care 5: 326-330.

21. Nicklas L, Dunbar M, Wild M (2010) Adherence to pharmacological treatment of non-malignant chronic pain: the role of illness perceptions and medication beliefs. Psychol Health 25: 601-615.

22. Mosleh S, Almalik M (2016) Illness perception and adherence to healthy behavior in jordanian coronary heart disease patients. Eur J Cardiovasc Nurs 15: 223-230.

23. Turrise S (2015) Illness representation, treatment beliefs, medication adherence, and 30 day hospital re-admissionin adults with chronic heart failure, a prospective correlational study. J Cardiovasc Nurs 13: 245-254.

24. Hsiao CY, Chang C, Chen CD (2012) An investigation on illness perception and adherence among hypertensive patients. Kaohsiung J Med Sci 28: 442-447.

25. MacInnes J (2013) Relationships between illness representations, treatment beliefs and performance of self-care in heart failure: A cross-sectional survey. Eur J Cardiovasc Nurs 12: 536-543.

26. Zugelj U, Zupancic M, Komidar L, Kenda R, Varda N, et al. (2010) Self-reported adherence behavior in adolescent hypertensive patient's: The role of illness representations and personality. J Pediatr Psychol 35: 1049-1060.

27. Chen SL, Tsai JC, Chou KR (2011) Illness perception and adherence to therapeutic regimens among patients' with hypertension: A structural modeling approach. Int J Nurs Stud 48: 235-245.

28. Dalbeth N, Petrie K, Horne M, Chong J, Leung W, et al. (2011) Illness perceptions in patients' with gout and the relationship with progression of musculoskeletal disability arthritis. Arthritis Care Res (Hoboken) 63: 1605-1612.

29. Ashur S, Shah S, Bosseri S, Morisky D, Shamsuddin K (2015) Illness perceptions of libyans with T2DM and their influence on medication adherence: A study in a diabetes center in tripoli. Libyan J Med 10: 29797.

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