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RESEARCH ARTICLE

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Adherence to Antihypertensive Treatment and Factors Associated with Adherence Amongst Hypertensive Patients on Follow-up at the Mankon Sub-Divisional Health Center, Ntingkang, Bamenda, Cameroon

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ABSTRACT

Hypertension is an overwhelming global challenge causing 7.1 million premature deaths each year worldwide and accounts for 13% of all deaths globally. Poor adherence to antihypertensive therapy is one of the biggest obstacles in the therapeutic control of high blood pressure. This study therefore evaluated the adherence to antihypertensive treatment and factors associated with adherence. This cross – sectional hospital based study involved 100 randomly selected hypertensive patients on follow up at the Mankon sub – divisional health center, Ntingkang. Morisky Medication Adherence scale was used to assess the adherence and McDonald's composite percent of scores was used to classify the level of knowledge and level of adherence respectively. Data collected were analyzed using SPSS version 17.0 and the results showed that most of the participants were married (60.0%) and were females (65%) within the age range of 51 – 60 years (40%). Also, majority of the participants know the signs and symptoms of hypertension (95%) as well as the most common complication of hypertension (100%). The level of adherence was found to be high (80.0%) with smoking (85%) and alcohol intake (55%) identified as the factors associated with adherence. In conclusion, moderate level of knowledge (77.5%) was found as opposed to a high level of adherence (80.0%) and no significant relationship was found between level of knowledge and level of adherence.

Keywords: *Adherence, Hypertension, Antihypertensive treatment, Associated factors, Mankon, Ntingkang, Bamenda, Cameroon*

Introduction

Hypertension is defined as raised systolic or diastolic blood pressure equal to or more than 160/95 mmHg according to the World Health Organization [1]. Hypertension is an overwhelming global challenge which ranks third as a cause of disability adjusted life year [2]. Hypertension causes 7.1 million premature deaths each year worldwide and accounts for 13% of all deaths globally [3]. Epidemiological data obtained in more than 25 countries indicates that by 2025 one billion nine – hundred and seventy – two million people aged 18 to 91 years will present with hypertension [4,5]. In Africa, 15% of the population has hypertension [6] although there is shortage of extensive data.

Although hypertension is considered a disease of multifactorial etiology, certain risk factors such as age, race/ethnicity, overweight and obesity, excessive intake of salt and alcohol for a long period of time, sedentary lifestyle, smoking, socio – demographic factors, education and genetics are more relevant [4,7]. Due to the high morbidity and mortality resulting from the complications caused by hypertension, it is necessary for patients to have adequate control of their blood pressure, which could be achieved through the use of pharmacological, and non – pharmacological therapies. Non – pharmacological therapy involves lifestyle changes that emphasizes on regular physical exercise, weight loss, a diet low in sodium and fat, no consumption of alcohol, no smoking and stress management [8]. Pharmacological therapy may be performed with a variety

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of classes of antihypertensive medication and their combinations.

Non – adherence to prescribed medication has been a global problem as studies have shown that it has affected the most in patients with chronic illness such as diabetes and hypertension [9,10]. Poor adherence to antihypertensive therapy is one of the biggest obstacles in therapeutic control of high blood pressure [11] and is usually associated with bad psychological complications of the disease such as reducing patient's quality of life, wastage health care resources and erodes public confidence in health care system [12]. In Cameroon, little or no research has been carried out on the adherence status and factors associated with adherence. This study therefore aims at assessing the adherence to antihypertensive treatment and factors associated with adherence amongst hypertensive patients on follow – up at the Mankon Sub – Divisional Health Center, Ntingkang.

Materials and Methods

Study Area:
This hospital based cross – sectional descriptive study was carried out at the Mankon Sub – Divisional Health Center, Ntingkang located in the North West Region of Cameroon. This hospital runs a hypertensive clinic and also serves as a referral hospital for other health centers within the study area.

Study population:
100 hypertensive patients (both males and females) aged 18 years and above were randomly selected to take part in the study.

Data collection:
Data was collected using the Morisky Medication Adherence Scale (MMAS) [13] which is based on patients' self-report while the level of knowledge and adherence were obtained using the McDonald's composite percent of scores [14]

Data analysis:
Data were analyzed using SPSS version 17.0. Descriptive statistics was used to summarize the data and Pearson Product Moment correlation was used to find relationship. Tables and figures were used to present summarized data.

Ethical Considerations:
Authorization for this study was sought from the North West Regional delegation of public health. Each participant signed an informed consent form before participating and also full confidentiality and participants' rights were maintained.

Results

Demography of the participants:
Table 1 shows that majority of the participants were within the age range of 51 – 60 years (40%) and were mostly females (65%) who were married (60%). Most of them (65%) were farmers with First School Leaving Certificate (FSCL) (60%) as their highest qualification obtained.

Knowledge on hypertension:
McDonald's standard of learning outcome measured criteria was used to categorize patient's level of knowledge regarding hypertension. Using the McDonald's composite percent of scores, the overall patient's knowledge regarding hypertension was at a moderate level (77.50%; SD = 23.27) with minimum and maximum scores of 55% and 100% respectively. Considering each question, participants had very low level of knowledge on what blood pressure is (55%) and normal blood pressure value (60%) but surprisingly they had high level of knowledge on the signs and symptoms (95%) and the most common complication of hypertension (100%).

Adherence of patients to antihypertensive treatment:
Using the McDonald's composite percent of scores, the overall level of adherence of patients to antihypertensive treatment was high (80.0%; SD = 4.08). From the questions on the Morisky' s Medication adherence scale, most of the patients (85.0%) were not careless at times about taking their medication; never forgot to take their medication (80.0%) and did not stop taking their medication when they felt worse (80.0%).

Factors associated with adherence:
The factors found in the study area that hinder adherence to hypertensive treatment were cigarette smoking, alcohol consumption, respecting clinic days and sticking to medical advice**.** Majority of the participants in this study smoke cigarette (85.0%) and drink alcohol (55.0%) notwithstanding, they always respect clinic days (90.0%) and stick to the advice given to them by the health professionals (85.0%).

Relationship between level of knowledge and level of adherence:
No statistical significant correlation was found between patient's level of knowledge and their level of adherence to antihypertensive treatment ($r = -0.614$, $p > 0.05$).

Discussion

Ensuring patient's adherence to antihypertensive treatment to prevent complications of hypertension remains a major challenge to public health in developing countries [2].

From the demographic presentation (**Table 1**) majority of the participants were within the age range of 51 – 60 years (40%) and were mostly married (60.0%) females (65.0%). This result is similar to that of Habtamu and Mesfin [15], who reported that majority of the hypertensives were females (57.7%) who were married (68.2%). This could be due to the fact that most women turn to be more hypertensive with age, a phenomenon that has been well documented [16,17].

Table 1: Demographic characteristics of the study population

Variables	N (%)
Age in years	
18 – 30	5 (5.0)
31 – 40	10 (10.0)
41 – 50	25 (25.0)
51 – 60	40 (40.0)
>60	20 (20.0)
Sex	
Male	35 (35.0)
Female	65 (65.0)
Marital status	
Married	60 (60.0)
Single	5 (5.0)
Divorced	5 (5.0)
Widow/widower	30 (30.0)
Level of Education	
FSLC	65 (65.0)
O level	10 (10.0)
A level	10 (10.0)
Degree	5 (5.0)
Masters	10 (10.0)
Occupation	
Farmer	65 (65.0)
Teacher	5 (5.0)
Business	10 (10.0)
Builder	5 (5.0)
Hair dresser	15 (15.0)

N = Number

Table 2: Patient's level of knowledge on hypertension

Patient's knowledge	Percent (%)	Level
Blood Pressure	55.0	Very Low
Normal Blood Pressure Value	60.0	Very Low
Signs and Symptoms	95.0	Very High
Most common complication	100.0	Very High
Mean Total Score	77.5 ± 23.27	Moderate

Table 3: Level of adherence of patients to antihypertensive treatment based on the Morisky's Medication Adherence Scale

Patient's Adherence	Percent (%)	Level
Never forgot to take medication	80.0	High
Is not careless at times about taking Medication	85.0	High
Do not stop taking medication When feeling better	75.0	Moderate
Do not stop taking medication When feeling worse	80.0	High
Mean Total Score	80.0 ± 4.08	High

Patient's knowledge on hypertension may play an important role in blood pressure control. This study reported a moderate (77.0%, SD = 23.27) level of knowledge on hypertension. This finding is in line with the work of Zungu and Djumbe in Botswana in 2008 [18] who in their study reported that the overall knowledge of hypertension among hypertensive patients was average. This however, is not in line with the findings from some developed countries that reported a low level of knowledge on hypertension [19]. Considering each question, participants had low level of knowledge on the definition of hypertension (55%) and the normal blood pressure value (60.0%). This result is similar to that of Chan *et al* [20] who reported that amongst the 7 dimensions of hypertension management questionnaire, the definition of hypertension, methods for blood pressure measurements and the impact of high blood pressure on cardiovascular disease had the lowest rates of correct answers.

Although there are currently a large number of pharmacological and non–pharmacological methods for the treatment of hypertension, adherence to treatment is a major challenge for the health care team. The overall level of adherence of patients to antihypertensive treatment was high (80.0%, SD = 4.08). This is consistent with previous studies done in Kuwait (88.6%), Nigeria (75%), India (73%) and Turkey (72%) [21-23]. This can be attributed to better access and care to patients. The level of adherence found in this study is however higher than that reported by Kahlil and Elzubier (53.3%) [24] and Huang *et al,* (56.7%) [25]. It is worth mentioning that data on the level of adherence to antihypertensive therapy varies and may be related to differences in the population studied and the measurement instruments used to assess adherence. The difference of values depending on the instrument used was investigated by Bloch *et al.* [26] using patient assessment, physician assessment and the Morisky Green test. These tests provided respectively 80.5%, 52% and 51% of adherence.

Most of the participants in this study smoke cigarette (85%) and take alcohol (55%) even though they respect their clinic days (90%) and stick to medical advice (85%) (**Figure 1).** Several studies have documented the effect of alcohol and cigarette smoke on hypertension. Grogan and Kochar [27] stated that alcohol consumption seems to be related with blood

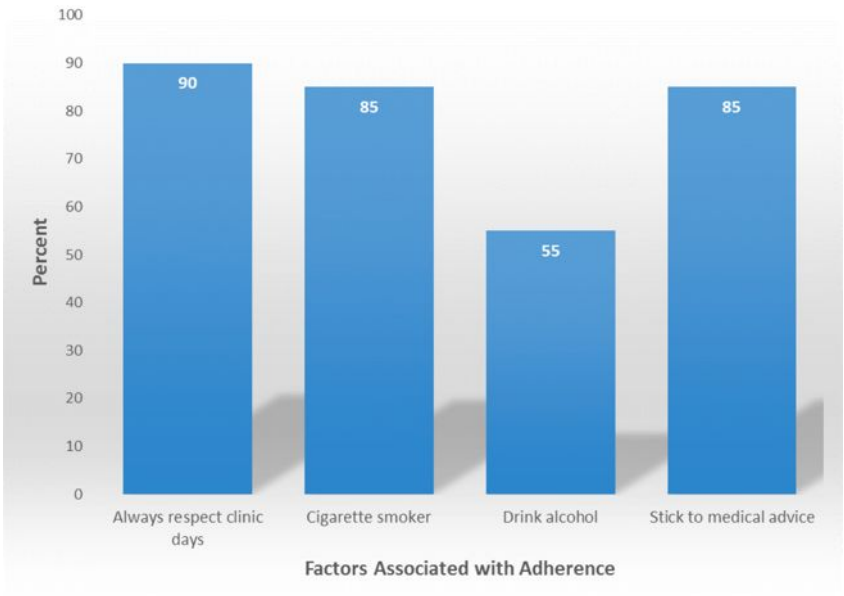

Figure 1: Distribution of the factors associated with adherence in the study area

Table 5: Pearson's product moment correlation coefficient between patient's knowledge and adherence to antihypertensive treatment

		Level of knowledge	Level of adherence
Level of knowledge	Pearson Correlation	1	0.614
	Sig. (2-tailed)		0.386
	N	4	4
Level of adherence	Pearson Correlation	0.614	1
	Sig. (2-tailed)	0.386	
	N	4	4

pressure elevation not through long term structural alterations but by neural, hormonal or other reversible physiological changes. Also Efstathias *et al* [28] reported that systolic and diastolic blood pressure rates were positively associated with alcohol intake. A link between tobacco and blood pressure is biologically plausible and cigarette smoking has been observed to cause acute increase in blood pressure in experimental settings [28].

This study found no statistical significant relationship between the level of knowledge and the level of adherence to antihypertensive treatment ($r = 0.614$, $p>0.05$). This may be due to the fact that most patients only follow instructions without possibly having a good knowledge about their condition; a typical characteristic of rural area in Africa. However, a study in Pakistan and Gaza demonstrated that patients who were aware of their disease and treatment had better adherence compared to those who did not [29].

Conclusion

From the results, hypertensive patients in the study area had a moderate (77.5%) level of knowledge on hypertension as opposed to a high (80.0%) level of adherence with smoking cigarette (85%) and alcohol intake (55%) identified as factors associated with adherence to antihypertensive treatment. However, this study did not find any significant relationship between level of knowledge and level of adherence to hypertensive treatment ($r = 0.614$, $p>0.05$).

Limitations

This study was conducted in Ntingkang a rural area in the North West region of Cameroon therefore results can only give information about the situation in the above rural area and may not reflect the situation in other rural areas of Cameroon worse still cannot be generalized to the entire country.

Looking at the importance of blood pressure control amongst hypertensives, the researchers plead that a research on a larger scale in other rural areas of Cameroon should carried out to see if the results are same and/or to be explore a wide range of factors that can hinder adherence to antihypertensive treatment amongst rural and urban habitants of Cameroon. The results we believe will go a long way in addressing the problem of adherence especially in rural areas of Cameroon, which are far from the touch of development. We are therefore ready for any sponsorship to carry out this research on a larger scale in other areas of Cameroon.

Acknowledgement

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Authors Column

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