



Impact of Non Pharmacological Intervention on Blood Pressure in Patients Attending a Tertiary Health Facility in North Eastern Nigeria

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Abstract

Prevalence of hypertension is high in Nigeria and there is generally low level of awareness. The mainstay of management is pharmacotherapy, interventions such as lifestyle and diet are often overlooked. The study is aimed at establishing the effectiveness of lifestyle and diet intervention on blood pressure control in patients. A multiphasic interventional study was adopted, which is a questionnaire based study with sections on knowledge, attitude and practices of lifestyle and diet. A pretested interviewer's questionnaire was administered before and after the intervention. The intervention included counseling on the benefits of lifestyle and dietary modifications. Chi-square test revealed that there were associations between the blood pressure categories and time of intervention. There was statistically significant difference in blood pressure in stage 2 category ($p < 0.05$). Scores of knowledge attitude and practice were compared on the basis of Wilcoxon signed rank test before and after the intervention. Also, the overall scores for the knowledge, attitude and practice were also compared for the participants before and after the intervention. The median knowledge score of the patients changed from 3 before the intervention to 7 after the intervention ($p < 0.01$). Similarly, there was a change in the median attitude score after the intervention ($p < 0.01$). While, the median practice score changed from 1 before the intervention to 7. Thus, the total median of the Knowledge, attitude and Practice (KAP) score had changed from 5 before the intervention, to 15 after the intervention ($p < 0.01$). The systolic/diastolic blood pressure were also compared pre and post intervention. The mean (SD) systolic BP changed from 144.2 (20.4) to 137.7 (13.0) post intervention ($p < 0.01$). A similar change was noted on mean (SD) diastolic BP as well, which changed from 91.6 (12.2) before the intervention to 89.4 (6.2) after the intervention ($p < 0.01$).

Keywords: Hypertension, Blood pressure, Knowledge, Practices.

Introduction

Hypertension is the largest risk factor for cardiovascular disease, growing in prevalence and poorly controlled virtually everywhere (Kearny *et al.*, 2004). It is the commonest non communicable disease in the world with important public health challenge in both economically developing and developed countries (Kearny *et al.*, 2004). Prevention is possible although rarely achieved and treatment can lead to reduced incidence of complications including stroke, coronary heart disease, heart failure and kidney disease. By the year 2030, 23 million cardiovascular deaths are projected with 85% occurring in low and middle income countries (Mathers *et al.*, 2006). A community based study of rural and semi urban population in Enugu, Nigeria put the prevalence of hypertension in Nigeria at 32.8% (Ulasi, *et al.*, 2010). This is similar to the result of a non-communicable disease survey in Abia state which obtained a prevalence of 31.8% among 2999 respondents (Ogah *et al.*, 2013). In Nigeria, awareness is poor as only 33.8% of hypertensive patients are aware of their condition (Familoni 2002, Akinkugbe 2003 and Kadiri 2005).

Materials and Methods

Study site

The study was conducted at University of Maiduguri Teaching Hospital (UMTH), located at Bama road, Maiduguri, Borno State. UMTH has 23 wards with a bed capacity of 650. UMTH is saddled with responsibilities of training, teaching and research. It also serves as a referral centre for the six North-Eastern States of Nigeria and the neighboring countries of Chad, Cameroon and Niger

Republics.

Research design

Multi-phase design (Interventional study) consisting of three phases was adopted for the study - Phase 1 was the pre intervention Phase, Phase 2 and 3 were the intervention and post intervention phases respectively. During the pre-intervention phase, selected subjects were interviewed. Data collection included blood pressure, baseline demographics, subjects' knowledge, attitude, practices of lifestyle/diet modifications. The intervention phase included prospective counselling and education on lifestyle and dietary modifications (JNC 8 recommendations on non-pharmacological management of hypertension), this was every other week from September 2016- December 2016 on the day of recruitment and via phone calls. Post-intervention assessment of blood pressure, knowledge attitude and practices of lifestyle and dietary modifications were assessed using the same questionnaire

Study Population

The population for the study included consenting hypertensive patients registered with and attending GOPD/Cardiology clinic of University of Maiduguri Teaching Hospital. Three hundred and eight (308) patients participated in the study, out of which two hundred and eighty six (286) met the inclusion criteria.

Inclusion Criteria

Consenting hypertensive out patients, old and new on medication, adults regardless of sex and access to functional mobile phone were used.

Exclusion Criteria

Non-consenting, in Patients and patients with mental illness leading to confusion e.g. delirium, dementia, psychosis, schizophrenia etc. Patients with complications and pregnancy induced hypertensive patients were excluded.

Materials used

Mobile phone, charts, pens, questionnaire and consent form

Statistical Method

Chi square test and Wilcoxon signed rank test were used to analyze the results.

Ethical Approval

Ethical approval was obtained from the UMTH authority (Date; 15/08/2016). Written and verbal consent were obtained from volunteer patients.

Results

Distribution of Patients blood pressure based on JNC 8 categories of blood pressure (Table 1)

Table 1: Distribution of patients based on categories of Blood Pressure by JNC 8 category

S/no	Blood Pressure Category	Pre intervention (%)	Post intervention (%)	P-Values
1.	Normal	40 (14.0)	52 (18.2)	>0.05
2	Pre Hypertension	67 (23.4)	94 (32.9)	>0.05
3	Hypertension stage 1	108 (37.8)	120 (42.0)	>0.05
4	*Hypertension stage 2	71 (24.8)	20 (7.0)	<0.05
	Total	286 (100)	286 (100)	

*significance Blood pressure of Patients before and after intervention

The blood pressure of the patients were categorized into the JNC 8 categories of blood pressure before the intervention before and after the intervention. There is however no significant differences in blood pressure categories of patient's pre and post intervention in the normal, pre hypertension and hypertension stage 1 categories. A remarkable decrease is observed in the number of patients with stage 2 hypertension after the intervention. The blood pressures of patients were compared before and after the intervention (Table 2) and a remarkable significant difference was observed.

Table 2: Blood Pressure before and after the intervention (n=286)

Blood Pressure	Before (mmHg) ± SD	After (mmHg) ± SD	P value
Systolic BP	144.2 ± 20.4	137.7 ± 13.0	< 0.05
Diastolic BP	91.6 ± 12.2	89.4 ± 6.2	< 0.05

Table 3: Knowledge, Attitude and Practice scores before and after the intervention

Characteristic	Median score (IQR)		P-Value
	Before	After	
Knowledge	3 (3)	7 (2)	< 0.05
Attitude	1 (1)	1 (0)	< 0.05
Practice	1 (1)	7 (2)	< 0.05
KAP Score	5(5)	15 (4)	< 0.05

Key: IQR =Inter Quartile Range, KAP = Knowledge, Attitude and Practice

Knowledge, attitude and practice scores before and after intervention.

The knowledge, attitude, practices and KAP combined scores and IQR of patients were compared before and after the intervention (Table 3). They however improved after the intervention ($P < 0.05$)

Discussion

The blood pressure of patients were categorized based on the JNC 8 Categories, there were more respondents with stage 1 hypertension, this is in line with a study conducted by Okwuonu *et al.* (2014) in Abia State, Nigeria. There was however no significant difference in all categories of blood pressure except the hypertension stage 2 ($p < 0.05$), this is beneficial because uncontrolled high blood pressure is associated with poor quality of life. Knowledge, attitude, practices and KAP combined were compared pre and post intervention. The median improved after the intervention for all four groups and there was statistically significant difference across the groups ($p < 0.01$). This is similar to the result of an interventional study conducted by Saranya *et al.*, (2016) which reported that knowledge, attitude and practice scores improved after intervention which is also in conformity with a study conducted by Mahajan *et al.* in Mumbai, India 2012, which reported that the poor knowledge attitude and practice decreased after the intervention and those practices of lifestyle/dietary modification improved after intervention.

This study has certain limitations. The research results are applicable to one health institution and may not be generalized to other health facilities in Nigeria. This research will serve as an eye opener for future research in terms of lifestyle and diet. Future research into non pharmacological management of hypertension should consider the effect of BMI and complications.

From the results of the study, it can be concluded that non-pharmacological intervention plays important role in controlling blood pressure and that patient's knowledge, attitude and practices of lifestyle and dietary modifications is a factor in blood pressure control.

Motivation and counselling stressing the importance of lifestyle modification is required for patients with chronic diseases such as hypertension. Patient counselling by the clinical pharmacist plays a vital role in imparting education to the patients.

Acknowledgement

We would like to thank all study participants for their contributions; the Cardiology/ General out Patient Departments of the UMTH and Drs Auta Gidado and Sheriff Yahaya Sheriff for assisting with taking blood pressure of Patients.

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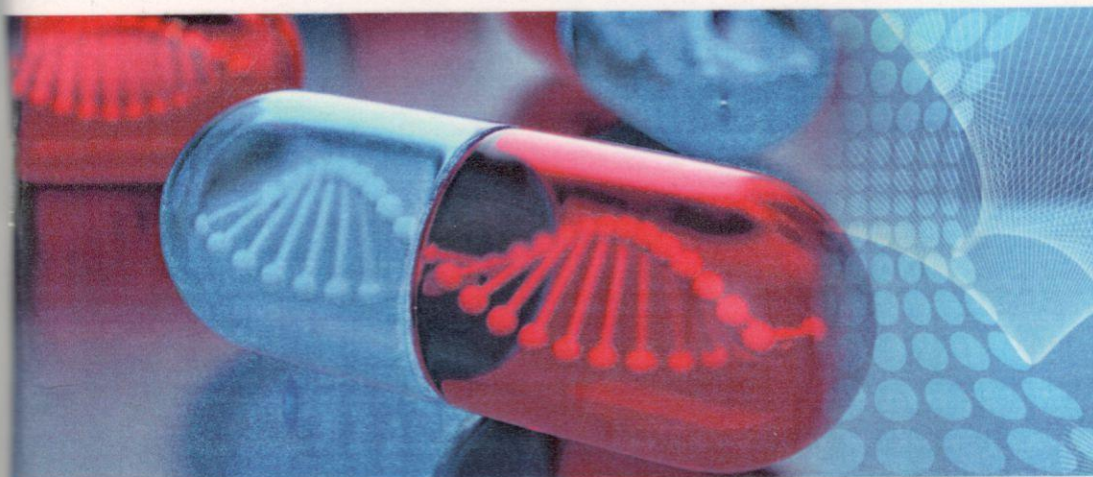
NIGERIAN JOURNAL OF PHARMACEUTICAL AND BIOMEDICAL RESEARCH



April 2017
VOL. 02, NO. 1
ISSN: 2579-1419



*Official Journal of the
Faculty of Pharmacy,
University of Maiduguri*



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