Knowledge, Attitudes and Practices of Hypertension among Hypertensive Patients at Buchi Clinic, Kitwe, Zambia

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Abstract:

Background: Hypertension is one of the most common health problems in the world and happens to be the leading risk factor for mortality. Knowledge, attitudes and life style modifications of patients play an important role in controlling hypertension and preventing the long-term complications. The aim of this study was to assess the level of knowledge, attitudes and practices and their compliance to medication among Hypertensive Patients at Buchi Clinic, Kitwe.

Methods: A cross-sectional study involving 90 randomly selected participants was conducted. Data was collected from June to August 2018 at Buchi Clinic, Kitwe, Zambia. A suitably designed questionnaire consisting of 30 questions was used to determine the KAP scores. The data was entered in SPSS Version 20 and analysed.

Results: A total of 90 patients participated and the majority (78.8%) were males. About half (52.2%) were aged between 45 to 64 years. About 32.2%, had received only primary education and nearly 3 out of 4 (77.8%) were unemployed. More than half (54.4%) had hypertension for 5 years or more. The knowledge and practice towards hypertension was found to be average, whereas the attitude was found to be good. Statistically significant association was found between knowledge and practice (p = 0.023).

Conclusions: The current knowledge, attitude and practice among hypertensive patients at Buchi Clinic, Kitwe Zambia is inadequate and should therefore be improved.

Keywords: hypertension, knowledge, attitudes, practice, medication adherence, Buchi Kitwe Zambia.

Introduction

Non communicable diseases (NCDs), such as cardiovascular diseases, cancers, diabetes, and chronic respiratory diseases are now the leading cause of death in most regions of the world (Reshma and Keneda, 2015). Africa the home of low and middle income countries is expected to have NCDs as the leading cause of death by 2030 because nearly half of the

population in this region already suffers from hypertension (WHO, 2014). Hypertension is ranked as one of leading causes of medical admission and mortality among adult patients at University Teaching Hospital (UTH) in Zambia (Nyirenda *et al.,* 2003) and its prevalence in Kitwe, Zambia is at 31.8% (Siziya *et al.,* 2012). Hypertension is defined as elevated blood pressure of 130 mmHg and higher for systolic blood pressure or readings of 80 mmHg and higher for the diastolic measurement. That is a change from the old definition of 140/90 and higher indicating that complications can occur at those (130/80) lower numbers (American College of Cardiology/American Heart Association, 2017).

It can be classified etiologically as primary (essential) and secondary hypertension. About ninety percent (90%) of cases are primary, defined as high blood pressure attributed to nonspecific, lifestyle and genetic factors, whereas the remaining ten percent (10%) is as a result of identifiable causes such as Chronic Kidney Disease (CKD), renal artery stenosis (narrowing), coarctation of the aorta, congenital adrenal hyperplasia, neurological causes, endocrine disorders (acromegaly, hyperthyroidism, hypothyroidism, hyperparathyroidism, cushing syndrome, pheochromocytoma/paraganglioma, or may be caused by the use of drugs such as Non-Steroidal Anti-inflammatory Drugs, (NSAIDS). Birth control pills (oral contraceptives), atypical antipsychotics (clozapine, olanzapine), decongestants (phenylephrine, pseudoepherine), amphetamines (amphetamine, methylpheridate, dexamethylpheridate, dextroamphetamine), recreational drugs (cocaine, methamphetamine), angiogenesis inhibitors (bevacizumab), antidepressants (monoamine oxidase inhibitors, serotonin-norepinephrine reuptake inhibitors and tricyclic antidepressants), systemic corticosteroids (dexamethasone, fludrocortisones, prednisolone) and mineralocortcoids. The risk factors for developing primary hypertension stem from familial predilection, male gender, and stress to lifestyle risk factors which include excess salt in the diet, excess body weight, excess fat/cholesterol intake, smoking, lack of physical exercise and excessive alcohol intake (Carretero and Oparil, 2000).

Many patients who suffer from this condition may not be aware of it early because it is rarely accompanied by symptoms and its identification is usually through screening, or when seeking healthcare for an unrelated ailment. Symptoms only show when very high which include headache (particularly at the back of the head), palpitations, lightheadedness, vertigo, tinnitus (buzzing or hissing in the ears), dizziness, altered vision or fainting episodes (Longo *et al.,* 2012). The goal of hypertension management is to prevent short and long term complications which can be achieved by maintaining the blood pressure reading of less than 130/80 mmHg. Controlling hypertension by changing lifestyle habits could decrease the cost of health care by decreasing the use of pharmacological and invasive cardiovascular treatments.

Good knowledge, positive attitudes and life style modifications of patients play an important role in the controlling of hypertension by maintaining its readings below 130/80 mmHg because as patients become aware of various aspects of hypertension, particularly modifiable risk factors, they tend to have good practices and be able to adhere to medication. Most studies conducted (Shaikh *et al.,* 2012; Anowie and Darkwa, 2015; Abd El-Hay and El Mezayen, 2015; Shrestha *et al.,* 2016) show poor knowledge, attitudes and preventive practices on the subject. However, no study has been conducted at Buchi Clinic, Kitwe, Zambia.

Methodology

A prospective cross sectional study was employed at outpatient department, Buchi clinic Kitwe, Zambia on hypertensive patients who come for review and to collect their monthly medications. Random sampling method was used to select a total of 90 participants.

Patients who were included in the study were above 25 years of age attending the outpatient department at Buchi clinic within the stipulated time of study duration, on antihypertensive medication and willing to participate by the act of signing the informed consent.

The data on pre-existing KAP was collected using suitably designed questionnaire through an interview method. The first part of the questionnaire was made up of socio-demographic information which included age, sex, marital status, level of education, occupation and duration of hypertension. There were 16 questions assessing knowledge, 5 questions assessing attitude and 9 questions assessing practice. The questionnaire was prepared in English but the interviewer translated it in the language preferred by the participant (bemba or Nyanja) when carrying out the interview.

Knowledge and attitude answers were scored one for correct and zero for incorrect or "I don't know" making a total of 16 and 5 respectively. On the other hand, the practice answers were scored two for frequent adherence towards the guidelines, one for occasional adherence and zero for non-adherence (never) for all the questions except question 4, 7 and 8 in which "never" was scored two, "occasional" was scored one and "frequent" was scored zero summing up to a total of 18.

The total score for each outcome variable was obtained by adding the score obtained from each question. The knowledge score were then categorized into poor (0–6), average (7–11) and good (12-16). The attitude sores were categorized as poor (1-2), average (3) and good (4–5). As for the practice scores, the categories were poor (0–6), average (7–12) and good (13–18). The results of the questionnaires were entered and descriptive statistics were performed with IBM-SPSS version 20.

The protocol was submitted to the Tropical Diseases Research Centre (TDRC) Research Ethics Committee for approval and permission was granted (IRB Registration Number: 00002911 and FWA Number 00003729). Permission was also sought from provincial and district health offices and was granted. Informed consent was obtained from willing participants. The anonymity and confidentiality of the data collected was upheld as no form of identification linked the questionnaire to any particular participant.

Results
Socio-demographic factors

There were a total number of 90 hypertensive patients who took part in the study representing 100% response rate. Out of this number, 70 (78.8%) were female. Age ranged from 36 to 83 years with mean and median of 59.3 and 61.0 respectively. The majority (52.2%) were between ages 45–64 as table 1 shows. Among the total participants, more than half (51.1%) had received only primary level of education, followed by 29 (32.2%) who received secondary education. Over two thirds (61.1%) of the participants were married followed by 24 (26.7%) widows as shown in table 1. Similarly, more than three quarters (77.8%) were unemployed. The majority (54.4%) had hypertension for more than 5 years as illustrated in table 1.

Table 1. Socio-demographic Variables (N= 90)

Variables	Frequency (N)	Percentage (%)
Age of Participants		
25 – 44	9	10.0
45 – 64	47	52.2
65 and above	34	37.8
Total	**90**	**100**
Sex of Participants		
Male	20	22.2
Female	70	77.8
Maritial Status of Participants		
Never married	3	3.3
Married	55	61.1
Divorced	8	8.9
Widow/widower	24	26.7
Total	**90**	**100**
Education Level of Participants		
Never went to school	10	11.1
Primary education	46	51.1
Secondary education	29	32.2
Tertiary education	5	5.6
Total	**90**	**100**
Occupation of Participants		
Government employee	3	3.3
Non-government employee	2	2.2
Self employed	2	2.2
Unemployed	70	77.8
Others	13	14.4
Total	**90**	**100**
Duration of Hypertension		
< 1	6	6.7
1-2	18	20.0
3-4	17	18.9
5 and more	49	54.4
Total	**90**	**100**

Others = retirees, business persons etc

Knowledge, attitude and practice scores

The mean and median knowledge (total score 16), attitude (total score= 5) and practice (total score=18) scores were 8.5 and 9, 4.52 and 5, and 11.02 and 11 respectively (table 2). Most of the patients (60.0%) who participated had average knowledge followed by poor (24.4%). A similar outcome was observed for practice where the majority (70.0%) had average followed by those with good practice (27, 30%). As for attitude, those with good attitude stood at 75 (83.3%) and the rest had average as depicted in table 2.

Table 2. Knowledge, attitude and practice results (N = 90)

Variables	Frequency (N)	Percent (%)	Median (mean)
Knowledge			
Poor	22	24.4	9.0 (8.54)
Average	54	60.0	
Good	14	15.6	
Attitude			
Average	15	16.7	5.0 (4.52)
Good	75	83.3	
Practice			
Average	63	70	11.0 (11.02)
Good	27	30	
Total	**90**	**100**	

Knowledge

Most of the participants (93.3%) identified stress, as one of the factors that can lead to hypertension. The majority were also able to identify high fat/cholesterol intake (87.8), excessive salt intake (83.3%), being overweight (70%) and excessive alcohol intake (62.2) as risk factors for developing hypertension. However, only a few knew that some drugs can cause hypertension (3.3%) and that antihypertensive medication may lower blood pressure below normal (36.7) as table 3 shows below.

Table 3. Correct response of patients towards knowledge

Questions	Frequency (N)	Percentage (%)
Do you know the normal BP readings?	6	6.7
Do you know what high BP is?	6	6.7
Does family history of hypertension increase risk for developing high BP?	43	47.8
Is excessive salt intake one of the risk factors for developing high BP?	75	83.3
Is excessive alcohol intake one of the risk factors for developing high BP?	56	62.2
Is being overweight a risk factors for developing high BP?	63	70.0
Is being older a risk factor for hypertension?	40	44.4
Is inactivity is a risk factor for hypertension?	52	57.8
Can stress lead to hypertension?	84	93.3
Is high cholesterol/fat intake a risk factor for hypertension?	79	87.8
Do you know the symptoms of high BP?	72	80.0
Can drugs cause hypertension?	3	3.3
Do you know how high BP is managed?	59	65.3
Do you have to take antihypertensives for life long?	53	58.9
Can antihypertensives lower BP below normal at times?	33	36.7
Do you know what complications can arise if BP is not controlled?	43	47.8

Attitude

Over three quarters of patients gave correct answers to all the attitude questions with the lowest response coming from a question concerning attitude towards regular medication (table 4).

Table 4. Correct response of patients towards attitude (N= 90)

Questions	Frequency (N)	Percentage (%)
Should we reduce salt intake to prevent hypertension?	87	96.7
Do you think regular checking of BP is important?	90	100
Should we keep in touch with physicians regularly?	90	100
Do you think regular medication is important in hypertension?	69	76.7
Should we exercise regularly for a healthy life?	74	82.2

Practice

Most patients never smoked (91.1%) or consumed alcohol (76.7%) with only 34 (37.8) who both reduced their salt intake and consulted their health care providers frequently (table 5). In terms of compliance with antihypertensive medication, 25 (27.8%) frequently missed a dose of their medication with those who occasionally and never missed being 48 (53.3%) and 17 (18.9%) respectively (table 5).

Table 5. Correct response of patients towards practice (N= 90)

Questions	Frequently n(%)	Occasionally n(%)	Never n(%)
How often do you measure your BP?	18 (20.0)	68 (75.6)	4 (4.4)
How often do you moderate your salt intake?	34 (37.8)	48 (53.3)	8 (8.9)
How often do you avoid fatty foods consumption?	31 (34.4)	50 (55.6)	9 (10.0)
How often do you consume alcohol?	4 (4.4)	17 (76.7)	69 (76.7)
How often do your perform physical exercise?	6 (6.7)	44 (48.9)	40 (44.4)
How often do you check your body weight?	5 (5.6)	58 (64.4)	27 (30.0)
How often do you smoke?	1 (1.1)	7 (7.8)	82 (91.1)
How often do you miss the dose of your medication?	25 (27.8)	48 (53.3)	17 (18.9)
How often do you consult your health care provider?	34 (37.8)	53 (58.9)	1 (3.3)

Associations

There was statistically significant association between knowledge of hypertension and practice (p =0.023) as shown in the table below.

Table 6. Association of practice with socio-demographic factors, knowledge and attitude

Variables		Practice		Total	Chi Square (P- Value)
		Average	Good		
Age of participant	25 – 44	6	3	9	0.579
	45 – 64	31	16	47	
	65 and above	26	8	34	
Total		63	27	90	
Sex of participant	Male	15	5	20	0.58
	Female	48	22	70	
Total		63	27	90	
Marital status of Participant	Not married	30	7	37	0.055
	Married	33	20	53	
Total		63	27	90	
Educational level of participant	Not educated	9	1	10	0.281
	Basic education	50	25	75	
	Advanced Education	4	1	5	
Total		63	27	90	
Occupation of participant	Employed	5	3	8	0.628
	Unemployed	58	24	82	
Total		63	27	90	
Duration of hypertension	Less than 5	32	9	41	0.127
	5 and more	31	18	49	
Total		63	27	90	
Knowledge	Poor	20	2	22	0.023
	Average	36	18	54	
	Good	7	7	14	
Total		63	27	90	

Discussion

Regarding socio-demographic characteristics of the participants, the study results revealed that the majority of the patients were aged 45–64 years (table 1) which is in line with a study conducted by Abd El-Hay and El Mezayen (2015) where 60.4% of their participants were aged between 55–64 years old. This was also in agreement with Tam *et al.,* (2014) and Wright *et al.,* (2011) who said that in their studies carried out in USA to investigate the prevalence of hypertension by age group and gender, there was a high prevalence of hypertension among older adults. Those aged 65 and above however may not have been more probably because the average life expectancy for Africans without HIV/AIDS stands at 64.5 and 71.5 years for male and female respectively (Statistics South Africa, 2018) suggesting that, most might have died.

In terms of sex, the group studied had more female participants which is similar to Abd El-Hay and El Mezayen (2015). This may attributed to the effect of postmenopausal hormone deficiency and may be due to the fact observed in our study that 26.7% of the participants were widows compared to zero widowers which may suggest that more males might have died in comparison with their opposite sex. This is not in any way different from Al-Wehedy *et al.,* (2014) who reported that in their study, hypertension was encountered more among

females than males due to many risk factors as changes in hormones that affect females more. Other studies elsewhere have reported similar trends (Eugene and Bourne, 2013; Anowie and Darkwa, 2015).

As regard to employment status and level of education, most of our participants were unemployed due to either only having reached up to primary level of education or not educated at all. This was in the same line with Bani (2011), and Abd El-Hay and El Mezayen (2015) who found in their study that hypertension was more prevalent among person with low level of education, retired persons, and persons with large family size.

The current status of knowledge, attitude and practice of hypertension among the hypertensive patients at Buchi Clinic (Kitwe, Zambia) was explored. The study showed the overall KAP scores for knowledge and practice to be average whereas that for attitude to be good. This study is similar to that conducted by Shrestha *et al.,* (2016) who found the overall KAP scores to be "medium" except knowledge that seemed to be at a better position than the other two scores.

The goal of hypertension management is to prevent short and long term complications which can be achieved by maintaining the blood pressure reading of less than 130/80 mmHg (American College of Cardiology/American Heart Association, 2017). Knowledge and life style modifications of patients play an important role in the controlling of hypertension. However, most participants in our study neither knew the normal BP readings nor were able to define hypertension correctly. A few who were able to answer, were noticed to have had reached tertiary level of education. These findings were in agreement with Rakumakoe (2011), even though his results (only 42% knew what their normal BP should be) were better than ours.

Factors associated with the development of hypertension can be put into two categories: modifiable and non-modifiable risk factors. Modifiable risk factors are characteristics, attributes, exposures or life style patterns that can be adjusted or changed to prevent development of the disease. These include obesity, physical inactivity, excessive salt intake, excessive alcohol consumption, tobacco use, high cholesterol/fat diet etc. On the other hand, non-modifiable risk factors are characteristics or attributes in the individual that cannot be adjusted or changed hence they are out of control as little or nothing can be done to control them. These include age, sex, race, family history, genetic predilection etc. Knowledge of the risk factors is vital in preventing and managing hypertension (Ibekwe, 2015).

In our study, the majority of participants were able to identify stress, high cholesterol/fat intake, excessive salt intake, being overweight, excessive alcohol intake, and inactivity in that order to be risk factors for developing the hypertension. However, only a few could identify old age and family history to be risk factors for developing hypertension. This was in agreement with Aubert *et al.,* (1998) who observed that high proportion of participants showed good basic knowledge on hypertension for example. Similarly, Ali *et al.,* (2006) reported that the participants in their study were aware of stress, excessive salt intake and obesity as risk factors for hypertension even though they demonstrated poor awareness with regards to excessive alcohol intake, smoking and a sedentary lifestyle which is in the same line with Shaikh *et al.,* (2011).

Despite having average basic knowledge, specific information about hypertension was shaky. More than three quarters knew at least one symptom of hypertension. Most of the symptoms

listed were headache (occipital), palpitations, fatigue and tiredness. This was in line with Kofi (2011). However, only a few could say that hypertension may be asymptomatic. Similarly, more than half knew that antihypertensive medication should be taken for life long. They reported having received this information from their physicians, though some of them still believed that one may consider stopping medication if the BP normalizes. On the contrary, less than half had knowledge of at least one complication that can arise if hypertension is not controlled. Furthermore, the majority did not know that antihypertensive medication may lower BP below normal values, and over 95% lacked information about drugs causing hypertension. A few who demonstrated better knowledge on specific information were observed to be those who were employed and had reached up to tertiary level of education.

Shaikh *et al.,* (2012) held the same observation as their study revealed that educated people had better understanding of hypertension than patients who were less educated. Educated people were able to understand the complications of blood pressure more effectively. This was also in agreement with Anowie and Darkwa (2015), and Abd El-Hay and El Mezayen (2015). However, it contradicted with Kumar *et al.,* (2015) who said that most of the hypertensive patients didn't have any knowledge about signs and symptoms and complications of hypertension which is a worrying finding in their study.

As for attitude, the findings of our study was better than a research done by Parmar *et al.,* (2014) where they observed poor score in attitude part of the questionnaire as only 45.2 % had positive attitude towards exercise compared to our study where there was 82.2% positive attitude response towards exercise. As earlier stated, the overall attitude score in our study was good with the lowest response coming from a question on whether they think regular medication is important in hypertension. This question's lower response compared to the other attitude questions may be attributed to the fact that some patients held a perception that antihypertensive medication actually raises their blood pressure. Side effects of these drugs could have been another contributing factor.

Salt reduction has been suggested as a possible adjunct to pharmacologic treatment to enhance blood pressure control. Several studies have investigated this matter and found that, for hypertensive patients who are receiving antihypertensive medication; salt restriction provides additional benefits in terms of blood pressure control (Dennison *et al.,* 2007). Reduced intake of dietary sodium to 1.5g/day is seen to have an estimated reduction in Systolic Blood Pressure of 6 mm Hg in hypertensive patients (American College of Cardiology/American Heart Association, 2017). The majority of the subjects in our study had a better understanding and attitude towards the risk of excessive salt intake to prevent hypertension. However, the practice of salt moderation of our study population was not very impressive. This implies that patients know that they have to moderate their salt intake but they may not have adequate knowledge on total daily intake, dietary plan or even management aspect of their salt intake. This also applies to other dietary habits such as fatty food consumption.

Physical activity has often been used in conjunction with weight reduction strategies as adjuncts to pharmacological management for the treatment of hypertension. Physical activity of about 120–150 minutes per week of aerobic exercise is approximated to have 8 mm Hg decrease in SBP (systolic blood pressure), 90–150 minutes per week of dynamic resistance (6 exercises, 3 sets/exercise, 10 repetitions/set) offers a reduction in SBP approximated to be at 4mm Hg, three sessions per week of isometric resistance (4 x 2min, 1 min rest between exercises) is approximated to give a SBP reduction of 5 mm Hg (American College of

Cardiology/American Heart Association, 2017). However, practice of exercise in our study was found to be poor. This was in agreement with Shretha *et al.,* (2015) who reported that both attitude and practice of exercise was found poor in their study, though the attitude in our study was found to be good.

Our study found that the practice of the hypertensive patients at Buchi Clinic, Kitwe Zambia with regard to the medication adherence was at inferior position. The reasons for poor compliance included non-availability of antihypertensive medication at local clinics near their (patients) residence, unpleasant drug side effects, insufficient specific information about hypertension, forgetfulness and poly-pharmacy (administration of many different drugs concurrently). Shrestha *et al.,* (2015) also reported poor compliance with medication which was thought to be higher in males (Jin, 2008). They attributed this to the side effect of impotence caused by some antihypertensive medication that includes thiazides, beta-blockers and alpha-blockers (James, 2014). However, their study population had 20% higher number of males than females which they thought might have contributed to the number of individuals missing the dose of medication occasionally or frequently. On the contrary, our study had more females but still the compliance was poor.

Statistically significantly association was found between knowledge about hypertension and practices towards hypertension at p = 0.023. This implies that good knowledge brings about positive practices which favour a healthy lifestyle and prevents the development of complications. This was in agreement with Sa'adeh *et al.,* (2018) who found higher total knowledge (p= 0.001) to be statistically significantly associated with higher practice scores towards CKD prevention.

Conclusion and recommendations
The current knowledge and practice of hypertensive patients towards hypertension at Buchi Clinic, Kitwe, Zambia is inadequate while the attitude is good but not sufficient enough. Efforts should be channeled towards improving the levels of knowledge of hypertensive patients through adequate information, education and communication using the both print and audio-visual media. To enhance drug adherence, the clinicians should prescribe the minimal doses but best combinations and government should ensure availability of antihypertensive drugs in all government health facilities.

Study Limitation
Knowledge, attitudes and practices assessment from population surveys invariably poses the challenge of social desirability, whereby respondents tend to be reluctant to admit poor socially recognized attitudes and practices to avoid giving a negative impression (Welte *et al.,* 1998). Our study was not an exception, however, attempts to limit socially desirable or induced answers were made in our study as KAP questions pertaining to specific sensitive topics (eg, alcohol habits, overweight, lack of exercise, smoking) were embedded among questions relating to other issues to make questions appear as ordinary as possible.

Author's contribution
II conceptualized the study, participated in protocol preparations, data collections, analysis, interpretation, drafting and revision of manuscript. EK participated in conceptualization of the study, data analysis and interpretation, and revision of manuscript. VM supervised data analysis, interpretation of findings and preparation of manuscript.

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