Knowledge, Attitude and Perception of Hypertensive Patients Toward Their Care and Follow UP in Fako Division, Southwest Region of Cameroon

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ABSTRACT

Health belief and operational models are important in contextualizing enablers and barriers to a given health care process or health intervention in a specific or diverse setting. The purpose of the study is to appraise from patients' perspectives the approach of care and follow up for hypertensive patients in Fako Division in the Southwest Region of Cameroon, its suitability and recommending for a more comprehensive and adaptable approach. Concerning the theoretical scope, the study was guided by The Health Belief Model (HBM), The Theory of Human caring and the Theory of Health Promotion Model. It was a hospital-based cross-sectional study that employed concurrent triangulation mixed methods combining qualitative and quantitative survey approaches. All hypertensive patients (out and inpatients) and their care givers visiting the hospital during the study period as well as all health care providers and managers in the study setting were involved conveniently. Two hospitals were randomly selected; one public and one faith based hospital from among all the hospitals in the 4 main subdivisions of Fako, making a total of 8 hospitals of secondary and or tertiary levels of health facilities. Data were collected using a semi-structured questionnaire. An application to carry out the research was sent to the ethical review board of the University of Bamenda. Upon approval, Data were collected while abiding to the necessary ethical requirements. Data were digitalized with the support of EpiData version 3.1, and analyzed descriptively and inferentially using SPSS 21.0. As for the textual data (qualitative data), their abstraction was reduced following the process of thematic analysis with the support of Atlas Ti .2. The findings unfold that Hypertension was mostly perceived to be controlled not treated with major emphasis placed on prevention. It was recommended the complementarity between pharmacological and non-pharmacological approaches of treatment, with particular attention paid to prevention. It was generally perceived that prescription was by the doctor or physician though few acknowledged prescription by nurses. Number of barriers were identified and urged to be resolved. Compliance to treatment as well as treatment outcome were hindered by several factors, notably the diversity of treatment guidelines, the high cost of treatment, the inadequate availability of drugs, the ineffectiveness of drugs, resistance to drugs, inadequacy of staff and motivation, inadequate competent staff, poverty of patients, inadequacy of equipment notably BP machines that equally hinder self-monitoring by patients, non-compliance to treatment by patients, challenging home follow-up, enslavement of some areas, poor mobile network coverage in some areas, socio-political crisis, and psychological problems such as medication phobia and defection / pessimism.

KEYWORDS: *Hypertension, Patients, Care, Follow-up, Model*

INTRODUCTION

Hypertension is a complex, chronic and non-communicable disease condition that is usually referred to as the silent killer. It was formally known in the eighteenth century as hard pulse disease. It is the more-than-normal force exerted by the blood on the walls of the arteries as the heart pumps blood to the whole body. Hypertension is a major public health concern in Cameroon as well as globally. This is because of its persistently increasing prevalence, increasing rate of poor therapy compliance and increasing morbidity and mortality rates and constitutes a high healthcare expenditure globally. The overall prevalence of hypertension (defined as persistent blood pressure > 140/90 mmHg) for Canadians aged 18-74 is 21% according to the Canadian Heart Health Survey, is known to rise progressively with age. The Heart and Stroke Foundation of Ontario estimates that more than 2.4 million or 22% of Ontarians have hypertension. Medical management of chronic illness consumes about 75% of every health care dollar spent in the United States, and the provision of economical, accessible, and high-quality chronic disease care is a continuing concern across health care settings. Type 2 diabetes, hypertension, hyperlipidemia, and congestive heart failure are prime examples of common non communicable chronic diseases that cause substantial morbidity and mortality and require long-term medical management and follow-up. It is has been postulated that, by 2025, the prevalence of hypertension (HTN) will likely be increased by 60% to a total of 1.56 billion worldwide, suggesting that HTN remains a major and crucial public health problem. (1) Hypertension in Sub-Saharan Africa (SSA) has also been on the rise with reports indicating higher values in urban settings compared to rural settings. The prevalence of HTN in SSA ranges between 14.5% in rural Eritrea, 32.9% in semi urban Ghana (2,4), and 40.1% in urban South Africa. Likewise, adequate blood pressure (BP) control has been on the decline, ranging between 1.7% in rural Ghana, 4% in urban slum dwellers in Nigeria, and 21.5% in urban Kenya.

Background

The history begins in the 16th century with the development of devices to measure blood pressure, early descriptions of the variability of blood pressure, and recognition by the life insurance industry of the association between blood pressure levels and subsequent cardiovascular disease morbidity and mortality. This background has prompted sustained laboratory research efforts aimed at understanding the physiological control of arterial pressure, identifying mechanisms of hypertension, and developing medications, for the treatment of hypertension. In turn, these initiatives have resulted in clinical trials with hypertensive patients and population-based programs with the goals of more effectively treating and preventing hypertension and its cardiovascular consequences.

The English clergyman, Stephen Hales made the first published measurement of blood pressure in 173. Descriptions of hypertension came from the works of Thomas Young in 1808 and especially Richard Bright in 1836 who also discovered the link between heart enlargement and kidney disease, and subsequently kidney disease was often termed Bright's disease at this period. Later, in 1850, George Johnson suggested that the thickened blood vessels seen in the kidney in Bright's disease might be an adaptation to elevated blood pressure. Senhouse Kirkes in 1855 and Ludwig Traube in 1856 also proposed, based on pathological observations, that elevated pressure could account for the association between left ventricular hypertrophy to kidney damage in Bright's disease. Samuel Wilks however, observed something new, that, left ventricular hypertrophy and diseased arteries were not necessarily associated with diseased kidneys, implying that high blood pressure might occur in people with healthy kidneys. Later, the first report of a raised blood pressure in a person with no history of kidney disease was isolated by FA Mahomed in 1874 using a sphygmograph. The concept of hypertension as a generalized circulatory disease was taken up by Sir Clifford Allbutt, who termed the condition "hyperpiesia". Hypertension as a medical disease came into being in 1896 with the invention of the cuff-based sphygmomanometer by Scipione Riva-Rocci in,(10) which allowed blood pressure to be measured in clinics. In 1905, Nikolai Korotkoff improved the technique by describing the Korotkoff sounds that are heard when the artery is auscultated with a stethoscope while the sphygmomanometer cuff is deflated. Tracking serial blood pressure measurements was further enhanced when in the early 1980s Donal Nunn invented an accurate fully automated Oscillo metric sphygmomanometer device.

The term essential hypertension was used by Eberhard Frank in 1911 to describe raised blood pressure of unknown etiology. In 1928, the term malignant hypertension was coined by physicians from the Mayo Clinic to describe a syndrome of very high blood pressure, severe retinopathy and inadequate kidney function which usually resulted in death within a year from strokes, heart failure or kidney failure. It is interesting to note that Franklin D. Roosevelt had severe hypertension. However, while the menace of severe or malignant hypertension was

well recognized, the risks of more moderate elevations of blood pressure were uncertain and the benefits of treatment doubtful. Consequently, hypertension was often classified into "malignant" and "benign". In 1931, John Hay, Professor of Medicine at Liverpool University, wrote that "there is some truth in the saying that the greatest danger to a man with a high blood pressure lies in its discovery, because then some fool is certain to try and reduce it". This view was echoed in 1937 by the US cardiologist, Dudley, who suggested that "hypertension may be an important compensatory mechanism which should not be tampered with, even if we were certain that we could control it". Charles Friedberg's 1949 classic textbook "Diseases of the Heart" stated that "people with 'mild benign' hypertension (defined as blood pressures up to levels of 210/100 mm Hg) need not be treated. However, the tide of medical opinion was turning: it was increasingly recognized in the 1950s that "benign" hypertension was not harmful. Over the next decade increasing evidence accumulated from actuarial reports and longitudinal studies, such as the Framingham Heart Study, that "benign" hypertension increased death and cardiovascular disease, and that these risks increased in a graded manner with increasing blood pressure across the whole spectrum of population with increasing blood pressures. Subsequently, the National Institutes of Health also sponsored other population studies, which additionally showed that African Americans had a higher burden of hypertension and its complications .

The history of the development of appropriate techniques for measuring blood pressure revolves around Reverend Stephen Hales's work, who is generally credited as being the first person to measure arterial pressure, direct intra-arterial pressure in the horse in 1733. Almost a century later, the noninvasive sphygmographic devices were developed to measure blood pressure in humans. These early devices were cumbersome and not very sensitive. The introduction of the sphygmomanometer into clinical medicine in the late 1800s and early 1900s was accepted by some practitioners as a valuable aid to diagnosis.

After Korotkoff's 1905 landmark description of the sounds associated with the appearance of the pulse wave, there was little change in the measurement of blood pressure in the first half of the 20th century. Toward the end of the 20th century, based primarily on mercury-related health concerns (which many in the field vigorously debated and sadly enough still used in Cameroon), the mercury manometer has essentially been replaced with aneroid and electronic devices. Mercury is still used for calibrating these devices, and standardized protocols have been recommended to assure their accuracy. Additional 30

minutes. Casual blood pressure on the other hand consisted of the relatively stable basal blood pressure and a variable supplemental blood pressure. More recently, there has been increased recognition of the prognostic and hypertension management value of home blood pressure and ambulatory blood pressure monitoring, including the importance of day/night blood pressure differences.

At the beginning of the 19th century, hypertension was now seen as a risk factor in the USA, as the insurance industry provided early and consistent evidence for the clinical significance of higher blood pressures. Some companies began measuring systolic blood pressure in 1906. In 1911, a medical director of the Northwestern Mutual Life Insurance Company described the sphygmomanometer as an indispensable tool in life insurance examinations. Subsequently, thereafter, all progressive life insurance companies started blood pressure examinations of applicants for life insurance using the sphygmomanometer, though it was cumbersome using the type of sphygmomanometer at the time.

As the technique for measuring blood pressures improved, increasing evidence for a blood pressure-mortality relationship became apparent, more companies began to require blood pressure measurements of insurance applicants. By 1918, companies were measuring systolic and diastolic blood pressures by auscultation, under somewhat standardized conditions, rather than simply systolic blood pressures by palpation .

Historically the treatment for hard pulse disease consisted in reducing the quantity of blood by the use of leeches. This was promoted by The Yellow Emperor of China, Cornelius Celsius, Galen, and Hippocrates.

Between the late 19th and mid-20th centuries, varied therapies were used to treat hypertension but few were effective and were many a times poorly tolerated by the patients. Therapies used in that era included; strict sodium restriction sympathectomy (surgical ablation of parts of the sympathetic nervous system)(17)and pyrogenic therapy (injection of substances that causes sepsis with hyperpyrexia, indirectly reducing blood pressure). The first chemical for hypertension, sodium thiocyanate, was used in 1900 but had many side effects and was unpopular. Other treatments, such as barbiturates, bismuth, and bromides were mainly adjunct treatments rather than therapeutic. After the World War II, a popular and reasonably effective drug tetramethylammonium chloride and its derivative hexamethonium were in use. Later, still after the second world War hydralazine and reserpine were in

use.(they are still in use today in some parts of the world, Cameroon inclusive) Accordingly, a major breakthrough was achieved in the 1950s with the discovery of well-tolerated oral diuretics, the first of which was chlorothiazide, It was first used in 1958 and presently still in use.

A randomized controlled trial sponsored by the Veterans showed that the administration and comparing hydrochlorothiazide plus reserpine plus hydralazine versus placebo had to be stopped early because those not receiving treatment developed many more complications and it was deemed unethical to withhold treatment from them. The study continued in people with lower blood pressures and showed that treatment even in people with mild hypertension more than halved the risk of cardiovascular deaths. In 1975, the Lasker Special Public Health Award (created by Albert and Mary Lasker in1945 that encouraged biological and clinical advances that improved human health) was awarded to the team that developed chlorothiazide.. The results of these studies prompted public health campaigns to increase public awareness of hypertension and promoted the measurement and treatment of high blood pressure. These measures seemed to have contributed at least in part to the observed 50% fall in stroke and ischemic heart disease between 1972 and 1994. Soon more drugs became available to treat hypertension. The British physician James W. Black developed beta blockers in the early 1960s. The next class of antihypertensive to be discovered was calcium channel blockers. The first member was verapamil, a derivative of papaverine that was initially thought to be a beta blocker and used for angina, but then turned out to have a different mode of action and was shown to lower blood pressure. The renin–angiotensin system was known to play an important role in blood pressure regulation, and angiotensin converting enzyme (ACE) inhibitors were developed through rational drug design. In 1977 captopril, was described and this led to the development of a number of other ACE inhibitors. More recently angiotensin receptor blockers and renin inhibitors have also been introduced as antihypertensive agents.

Problem statement
Hypertension, (high blood pressure) is a global health problem associated with increased risk of developing cardiovascular disease. The high prevalence of hypertension and inadequate BP control among known hypertensive individuals in rural Cameroon with seemingly more of these cases in northwest and southwest regions, warrants greater sensitization and

regular screening to reduce hypertension-related morbidity and mortality.

It has been noted that high blood pressure (BP) is the leading preventable predisposing factor for cardiovascular disease (CVD), and hypertension ranks first as a cause of disability-adjusted life years worldwide. Suboptimal BP control and noncompliance to treatment protocols are the most common attributable risk factors for CVD and cerebrovascular disease, including haemorrhagic (58%) and ischemic (50%) stroke, ischemic heart disease (55%), and other forms of CVD (58%), including heart failure and peripheral arterial disease. In addition, hypertension is a leading cause of chronic kidney disease, kidney disease progression, and end-stage kidney disease, as well as dementia due to cerebral small vessel disease.

Large-scale epidemiological studies have provided definitive evidence that high BP, at ages above 18 years and in both sexes, maintains a continuous graded association with the risk of fatal and nonfatal stroke (transient ischaemic attack), ischaemic heart disease, heart failure, and non-cardiac vascular disease .

The prevalence of hypertension globally is high and continues to increase. Defined at the SBP/DBP cutoff of >140/90 mm Hg, the worldwide prevalence of hypertension is 31%, translating to approximately 1.4 billion adults. According to progressive studies, the prevalence of hypertension in the adult U.S. population is similar to the worldwide prevalence at 31.9% (72.2 million people) using the >140/90 mm Hg BP cutoff; the U.S. prevalence is projected to increase to 45.6% (103.3 million people) using the 2017 American College of Cardiology/American Heart Association (ACC/AHA) hypertension clinical practice guideline definition of BP >130/80 mm Hg.

According to close to twenty studies involving 46491 participants carried out in Cameroon, the overall hypertension prevalence was 30.9% [95% confidence interval (CI) 27.0–34.8]: Out of the 30.0% nearly 29.6% and 32.1% in 1994–2010 and 2011–2018, respectively were aware of their status as being hypertensive. It further revealed that, only 15.1% were complying with antihypertensive regiment.

It has been noted by the principal investigator that recently there are many cases of hypertensive crisis around Buea health District in Fako division from unknown hypertensive patients and known hypertensive cases who had stopped taking prescribed medications and resorted to other forms of medical pluralism or just did stop taking the medications for religious reasons and others. Of course, with this

trend of events, if more friendly strategies are not put in place then morbidity and mortality rates will keep rising with its consequent health burden on individuals, families and the state in a crisis torn environment that is ongoing.

Aim
The study aimed at appraising knowledge, attitude and perception of hypertensive patients toward their care and follow up in Fako division, southwest region of Cameroon.

This research objective was substantiated by the following research hypotheses:

H_1: Patients with low monthly income are not satisfied with care by nurses.

H_2: Patients have no contrary views on prescribed medication issued to them by prescribers.

H_3: Younger patients are not aware of preventive measures of hypertension.

Rationale
Cameroon's hypertension prevalence is high and increasing whereas awareness, treatment and control are low and declining. Emerging patterns call urgently for effective campaigns to raise hypertension awareness alongside strategies for hypertension prevention and more friendly adaptable approach for care, treatment and follow up. African countries, including Cameroon, have no guidelines for the management of hypertension. How high blood pressure (BP) distribution and hypertension prevalence, awareness, treatment and control rates vary over time countrywide and across population subgroups in Cameroon have limited statistics. This study will help informing health policy while improving in the care of hypertensive patients with particular emphasis on preventive methods and strategies.

Significance of the study
Hypertension is a major public health hazard which can be prevented, treated or as a last resort be controlled. Although strides have been made for the past years, there is still need to improve on follow up care. It will be significant because of its high prevalence, increased risk of cardiovascular diseases and its numerous sequelae due to complexity of risk factors as well as more challenges in mitigating some risk factors. Promoting a friendly adaptable approach to follow up patients, try to understand reasons for the increasing non-compliance attitude, to enhance compliance and to intensify public awareness on prevalence, risk factors and causes and to take charge of their health and be more responsible is important in its management. A hypertensive crisis creates stressful periods that may need a highly skilful

humanistic approach on health promotion to assist the patients to be more responsible health wise. A process of aggressive intensified awareness will be initiated as part of significant recommendations that will be made to nurses and other professionals involved in management and follow-up of hypertensive patients in Fako division of Cameroon.

Scope of the study
Thematic scope
The study will appraise the current patterns of caring for hypertensive patients as to propose and more contextualized and adaptable model. The study will then be centered on the main concept hypertensive patients and caring. These terms are well explained under the section 'Definition of key terms' below.

Geographical scope
Geographically, the work will be limited to the Fako division, in the Southwest region of Cameroon. The main reason for the selection is the growing number of hypertensive patients in the region. This study is limited to prescribers, nurses, significant others of patients, and hypertensive patients and will not involve pregnant women even if they are hypertensive.

Time scope
As regards temporal delimitation time-period scope, the work is a cross sectional study that will start in November 2023 to end in October 2024.

Theoretical scope
Concerning the theoretical scope, the study will be guided by The Health Belief Model (HBM), The Theory of Human caring and the Theory of Health Promotion Model .

Operational definition of key terms
Hypertensive: Having abnormally high blood pressure (hypertension). Hypertension is usually defined by the presence of a chronic elevation of systemic arterial pressure above a certain threshold value. However, increasing evidence indicates that the cardiovascular (CV) risk associated with elevation of blood pressure (BP) above approximately 115/75 mm Hg increases in a log-linear fashion. This aligns with WHO whereby hypertension, also known as high or raised blood pressure, is a condition in which the blood vessels have persistently raised pressure. Blood is carried from the heart to all parts of the body in the vessels. Each time the heart beats, it pumps blood into the vessels. Blood pressure is created by the force of blood pushing against the walls of blood vessels (arteries) as it is pumped by the heart. The higher the pressure, the harder the heart has to pump. Hypertension is a serious medical condition and can increase the risk of heart, brain, kidney and other

diseases. It is a major cause of premature death worldwide, with upwards of 1 in 4 men and 1 in 5 women – over a billion people -– having the condition. The burden of hypertension is felt disproportionately in low- and middle-income countries, where two thirds of cases are found, largely due to increased risk factors in those populations in recent decades. CDC aligns with the two previous definitions as it opines that High blood pressure, also called hypertension, is blood pressure that is higher than normal. Your blood pressure changes throughout the day based on your activities. Having blood pressure measures consistently above normal may result in a diagnosis of high blood pressure (or hypertension). The higher your blood pressure levels, the more risk you have for other health problems, such as heart disease, heart attack, and stroke .

Patient: A patient is an individual awaiting or under medical care and treatment. This is in line with this other definition considering a patient as a person who is receiving medical care, or who is cared for by a particular doctor. This was reiterated as a patient is any recipient of health care services that are performed by healthcare professionals. The patient is most often ill or injured and in need of treatment by a physician, nurse, optometrist, dentist, veterinarian, or other health care provider .

Materials and methods
Research design
It was a hospital-based cross-sectional study that employed concurrent triangulation mixed methods combining qualitative and quantitative survey approaches. Data were collected using a semi-structured questionnaire which is a typical survey instrument. Survey consists essentially of collecting people's opinion on a given issue. The study is cross-sectional because it makes just an appraisal or snapshot of the current situation.

Area of study
The study was carried in Cameroon, in Fako division of the Southwest region. Cameroon is a sub-Saharan central African country with over 28 million inhabitants and made up of ten regions. Fako Division lies at the foot of Mount Cameroon. It covers a surface area of 2093 km square and an average altitude of 2833 m with 534854 inhabitants and the average yearly temperature is about 26.4°C around the coast area. In terms of health, the Southwest Region of Cameroon possesses a regional delegation of public health, training schools for medical and health staffs and health supply centres. The Southwest Region comprises 19 health districts as follows: Buea, Limbe, Ekondo Titi, Kumba, Mamfe, Mbonge, Ekondpo, Fontem, Eyumojock, Bakassi, Muyoka, Nguti, Mundemba, Tombel, Wabane, Konye, Tiko, Bangem and Akwaya. This study was carried out in the Limbe and Buea Health Districts. The two health districts solicited for our study gain their grounds on their accessibility and their heavily populated state thank to their relative calmness patterning the socio-political crisis in Northwest and Southwest regions.

Study setting
This community-based study was conducted among teenage mothers in both Limbe and Buea Health District. While seven areas make up the Buea Health District (Bova, Bokwango, Buea Town, Buea Road, Molyko, Muea and Tole), eight health areas are found in Limbe Health District (Batoke, Bota, Idenau, Seaport, and Zone II, Moliwe, Bojongo and Mabeta).

Population of the study
All hypertensive patients (out and inpatients) visiting the sampled hospitals during the study period. This also makes up the targeted and accessible population. Their number is undetermined.

Sampling methods and sample size
Health facilities
Two hospitals were randomly selected; one public and one faith based hospital from among all the hospitals in the 4 main subdivisions of Fako, making a total of 8 hospitals of secondary and or tertiary levels of health facilities.

Participants
All hypertensive patients (out and inpatients) and their care givers visiting the hospital during the study period were involved in the study. Patients not mentally, psychologically or physically viable to participate in the study were excluded.

Sampling method
Purposive and convenient sampling techniques were used. Two hospitals were randomly selected; one public and one faith based hospital from among all the hospitals in the 4 main subdivisions of Fako, making a total of 8 hospitals of secondary and or tertiary levels of health facilities using the simple random sampling (table 1). Thereafter, the purposive and convenience sampling were used to select the participants whereby all patients were sampled as they consent.

Table 1: Sampled health facilities

Sub-division	Health facilities
Tiko (*share the same head quarter)	Cottage Hospital Tiko*
	District Hospital Tiko
	Central Clinic Tiko*
Buea	Buea Regional Hospital
	Mount Mary
Limbe	Presbytherian Health Center Limbe
	Regional Hospital Limbe
Mutengene	CMA Mutengene
	Regina Pacis

Instruments for data collection

Data were collected using a semi-structured questionnaire designed on a Likert-scale format and open-ended questions.

Validity of the instruments and data validation
Validity of the instrument

A major concern in research is the validity of the procedures and conclusions. Nana (2018), Amin (2005) and Gay *et al*. (2000) Validity is the quality of a data gathering instrument or procedure that enables it to measure what it is supposed to measure. A valid research finding is one in which there is similarity between the reality that exists in the world and the research results. Content validity, construct validity, face validity, internal validity and external validity were given prime attention. Guba's model for trustworthiness addresses ways for warding off biases in the results of qualitative analysis. In this study, however, the model is used to develop strategies that would introduce standards of quality assurance in the processing and analysis of the data. The five strategies are identified in. This considers credibility, transferability, comparability, dependability and conformability. The pilot study was conducted in a secondary school in Buea municipality. After the trial-testing phase, no issue was reported with the questionnaire. The reliability for the questionnaires was 0.716, which was quite satisfactory. Generally, any reliability coefficient of 0.5 and above is acceptable as a satisfactory measure of reliability , but convincing ones should be 0.7 or more on its standard scale of 0-1. According to , the more heterogeneous a group is on the traits being measured or the greatest range of scores, the higher and more convincing the reliability. In this study, the sample was diversified in its demographic characteristics. Cronbach Alpha Reliability coefficient enabled the researcher to ascertain whether the internal consistency of the responses was satisfactory to an acceptable level.

Data validation
Sample flow table

The return rate was 85% which was above the tolerated threshold of 80%.Excluded cases were essentially uncompleted questionnaire as stemming from patients' brake down in the course of data collection process (table 2).

Table 2: Sample flow table for Patients

SN	Name of health facility	Population / Targeted	Sample size	Administered	Returned	Excluded*	Validated	Return rate
1.	Regional hospital Buea.	77	60	77	40	14	26	43
2.	Regional Hospital Limbe	17	13	17	16	0	16	123
3.	District Hospital Tiko	22	16	22	20	1	19	119
4.	Cottage Hospital Tiko & Central clinic	40	32	40	35	13	22	69
5.	CMA Mutengene	15	12	15	14	0	14	117
6.	Regina Pacis	22	16	22	19	2	17	106
7.	Presbyterian Health centre , Limbe	22	16	22	21	0	21	131
8.	Mount Mary Hospital	15	12	15	15	0	15	125
	Total	230	177	230	180	30	150	85

*Not completely filled because of patients' condition.

NB: Previewed number of patients for each hospital is number of patients for 3 months taken from each register.

Reliability analysis

The internal consistency assumption was not violated for the two conceptual components including the IVM with very good reliability coefficient values ranging from 0.710 to 0.908 (Table 3). This therefore implies that the items on the questionnaire were understood and answered to a satisfactory level of objectivity by the patients. The variance was relatively high, far from 0 from the conceptual component 'Attitude towards disease' thus implying that patients are more likely to be diversified in their attitude. For the other conceptual component, that is satisfaction with the kinds of care, the variance is close to 0, with a value of 0.040, thus implying that we are more likely to be faced with skewed distributions, with patients' viewpoints tilting more towards positive or negative views or perceptions. In the other sense, patients are more likely to be homogenous in their perceptions of this indicator.

Table 3: Reliability of patients' questionnaire

Conceptual components	Cronbach's Alpha reliability coefficient	Variance	N of Items	N of Cases
Attitude towards disease	0.908	0.115	20	150
Satisfaction with the kinds of care	0.710	0.040	10	150
Integrated Value Mapping (IVM)	0.903	0.175	30	150

Data collection process

Data was collected using the face-to-face approach while abiding to the necessary ethical considerations.

Ethical consideration
Ethical clearance

Ethical approval will be obtained from the Faculty of Health Sciences Institutional Review Board of the University of Bamenda. An informed consent form was used and approved by each participant.

Administrative clearance

Administrative approval was obtained from the Regional Delegations for Public Health and from the administration of Buea and Limbe Regional Hospitals.

Consent

The protection of human subjects through the application of appropriate ethical principles is important in any research study. The researcher ensured that the subjects were aware of the purpose of the research and the manner in which it would be conducted. Participation in the research was voluntary, and withdrawal was possible at any time. Measures were taken to ensure confidentiality. Names of schools, teachers and pupils were changed. Specific details or references which could easily lead a reader to deduce the identity of the participant were made more generic. This was a particular concern in sections dealing with potentially sensitive issues.

Data management and analysis
Quantitative data

Quantitative data was entered using EpiData Version 3.1 (EpiData Association, Odense Denmark, 2008) and analyzed using the Statistical Package for Social Sciences (SPSS) Standard version, Release 21.0 (IBM Inc. 2012). These structured questions were analyzed using frequency, proportions and multiple-responses analysis to aggregate score within conceptual component. Statistics were presented in tables and charts. Hypotheses were tested using the Chi-Square test of independence while Binary Logistic Regression was used to depict significant and critical predictors of knowledge, perception and attitude.

Qualitative data analysis

The study employed a concurrent triangulation mixed-method approach whereby beside a structured questionnaire dealing essentially with close-ended questions, qualitative information were collected via interviews. Interviews were transcribed verbatim and revised by a Ph.D. candidate and the statistician. Each interview was prepared as a single primary document and assigned for coding and analysis in Atlas.Ti 5.2 software (Atlas.ti Scientific Software Development GmbH, Berlin, Germany). This program easily automates the coding process and examines huge amounts of data and a wider range of texts quickly and efficiently, once the coding is done. The researcher can now examine the data and draw possible conclusions and generalizations. These textual data were analyzed using the process of thematic analysis whereby concepts or ideas were grouped under umbrella terms or key words. The first stage consists deciding on the level of analysis. At this level, single words, clauses and sets of words or phrases were coded. The researcher did not initially decide on how many different concepts to code and for this reason, a pre-defined or interactive set of concepts/categories was not

initially developed and concepts or umbrella terms emerged from the data. However, pre-established standardized terminology was used to enrich the umbrella terms that emerged from the study as to make the findings more comparable. The primary documents of textual data were coded for every independent idea as it emerged from the data and for frequency of concepts following the positivism principle, but the theoretical perspective guiding the interpretation of findings was dominantly qualitative. However, the frequency or grounding also reflects how many times a concept emerged and was a major indicator of emphasis. Precautions were taken to clearly determine the meaning of themes or umbrella term and what they stand for. In the context of this study, to satisfy this requirement, findings were organized in code-grounding-quotation tables whereby themes or codes were clearly explained or described, followed by their grounding or frequency of occurrence and at the same time backed by their related quotations presented verbatim. The code-quotation table ensures the objectivity and reliability of qualitative analysis in the sense that if code/concepts/umbrella terms and their descriptions can be subjective to relative bias, the quotations are grounded and real and thus help compensate for potential bias .

Findings
Socio-demographic information
Sex
Female were more than the male in the sample with a proportion of 63.3% (95) as against 36.7% (55) for the male.

Marital status
Majority of patients were married 64.0% (96), followed by the single 21.3% (32), the widowed / widower 6.7% (10), while 8.0% (12) were come-we-stay.

Age
The mode age was 50 to 55 years 22.7% (34) and the least represented age range greater than 75---80, 0.7% (1). Cumulatively, 55.3% of patients were aged 45 years or above.

Spirituality / religion
Hypertensive patients were generally Christians 94.0% (141). Only one was Muslim, 2.0% (2) Pegan while 3.3% (5) practiced other religions.

Level of education
The mode here was no formal education or never been to school, with proportion of 40.0% (60), followed by those that have attained tertiary level 26.7% (40). Cumulatively, 49.3% of them have attained secondary school or higher.

Category of occupation
Majority of them were involved in a sedentary type of activity 58.7% (88).

Range of monthly income
Majority of them earned below 50000 frs 56.7% (85).

Number of dependent children or other family members or others
Only 25.3% (38) of them had no dependent child. Cumulatively, 53.3% of them had 2 children or less.

Health facility
Patients were sampled in 9 health facilities namely Buea Regional Hospital 17.3% (26), Mount Mary 15.3% (23), Presbytherian Health Center Limbe 14.0% (21), District Hospital Tiko 12.7% (19), Regina Pacis 11.3% (17), Regional Hospital Limbe 10.7% (16), CMA Mutengene 9.3% (14), having the same percentage with Cottage Hospital Tiko.

Table 4: Demographic characteristics of patients

Sex	n	%
Male	55	36.7
Female	95	63.3
Marital status	**n**	**%**
Married	96	64.0
Single	32	21.3
Widowed / Widower	10	6.7
Come-we-stay	12	8.0

Age	n	%
Equal or greater than 21—25	15	10.0
Greater than 25---30	15	10.0
Greater than 30----35	13	8.7
Greater than 35----40	14	9.3
Greater than 40---45	10	6.7
Greater than 45---50	9	6.0
Greater than 50---55	34	22.7
Greater than 55---60	8	5.3
Greater than 60---65	12	8.0
Greater than 65---70	8	5.3
Greater than 70---75	9	6.0
Greater than 75---80	1	.7
Above 80	2	1.3
Spirituality / Religion collapsed	**n**	**%**
Christian	141	94.0
Peganism	3	2.0
Islam	1	.7
Others	5	3.3
Level of education	**n**	**%**
No formal education	60	40.0
FSLC	16	10.7
Secondary education	15	10.0
High school	19	12.7
Tertiary education	40	26.7
Category of occupation	**n**	**%**
Sedentary	88	58.7
Not sedentary	62	41.3
Range of monthly income	**n**	**%**
Below 50,000	85	56.7
From 50,000 to 100,000	41	27.3
Above 100,000 to 150,000	15	10.0
Above 150,000 to 200,000	3	2.0
Above 200,000 to 250,000	4	2.7
Above 250,000	2	1.3
Number of dependent children or other family members or others	**N**	**%**
None	38	25.3
One	18	12.0
Two	24	16.0
Three	21	14.0
Four	29	19.3
Five	20	13.3
Health facility	**n**	**%**
CMA Mutengene	14	9.3
Presbytherian Health Center Limbe	21	14.0
Regional Hospital Limbe	16	10.7
Cottage Hospital Tiko	14	9.3
Buea Regional Hospital	26	17.3
Regina Pacis	17	11.3
District Hospital Tiko	19	12.7
Mount Mary	15	10.0
Central clinic Tiko	8	5.3

Category of health facility	n	%
Public	75	50.0
Private	75	50.0

Perceptions and attitude of patients towards the care and follow up of hypertensive patients in Fako division

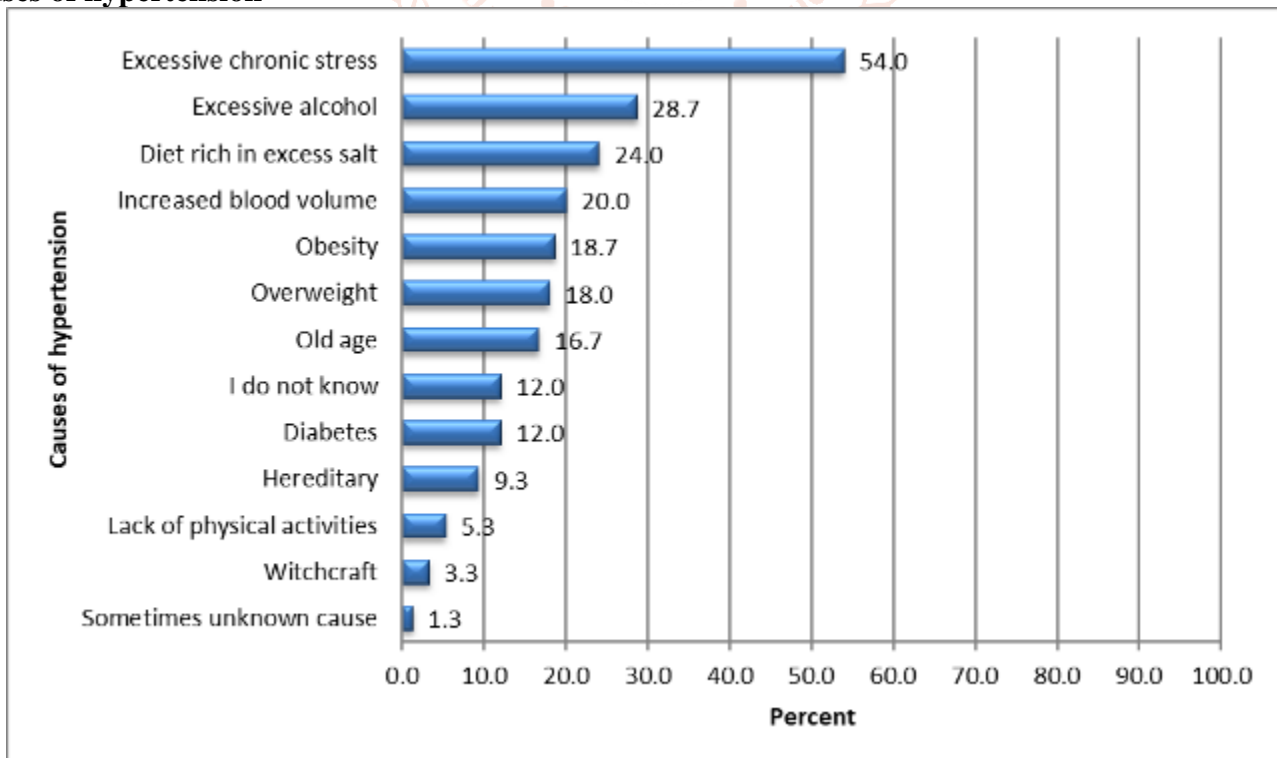**Knowledge on hypertension**
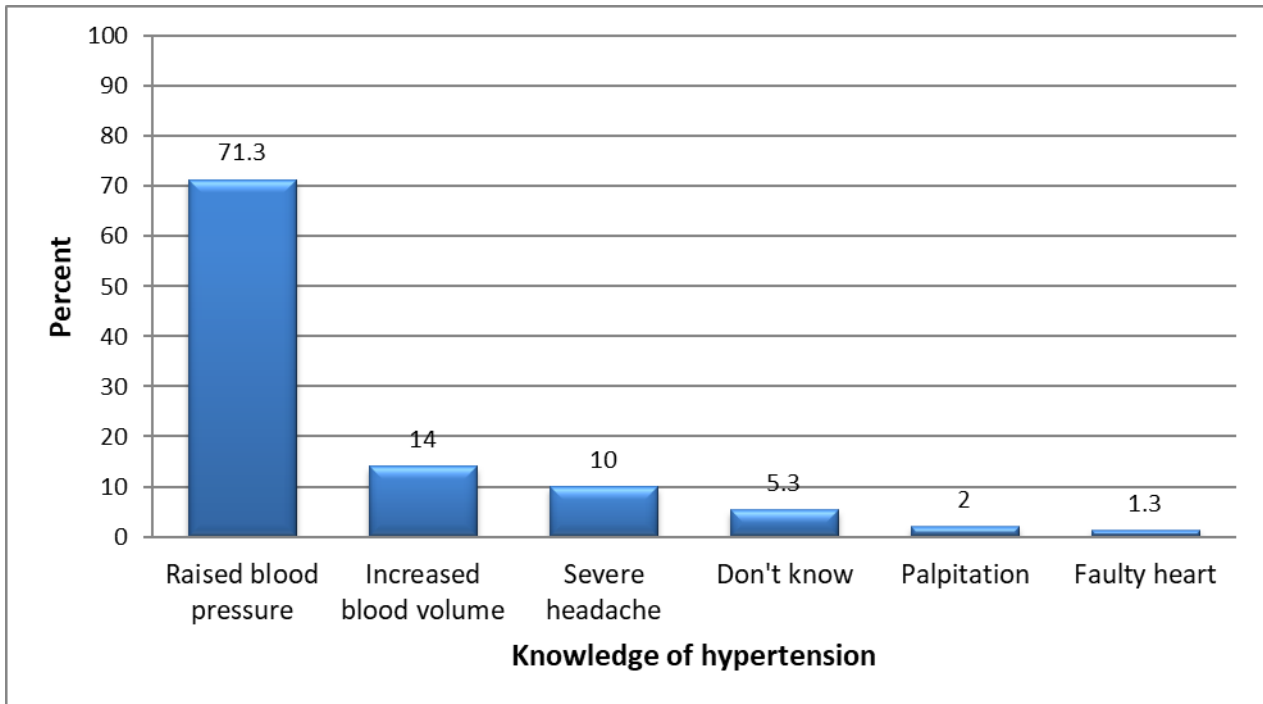
N=150

Figure 1: Hypertensive patients' knowledge of hypertension

Only 5.3% (8) of the patients said not to know what hypertension is. As for the rest they described hypertension as mostly the rise in blood pressure 71.3% (107), as highlighted on figure 1.

Causes of hypertension

N=150

Figure 2: Causes of hypertension

Patients mostly perceived that hypertension was caused by excessive chronic stress 54.0% (81), as presented on figure 2.

Hypertensive status of patients

N=150

Figure 3: Hypertensive status of patients

Majority of patients were hypertensive at the moment of survey 62.0% (93), figure 3.

How patient knows he / she is hypertensive
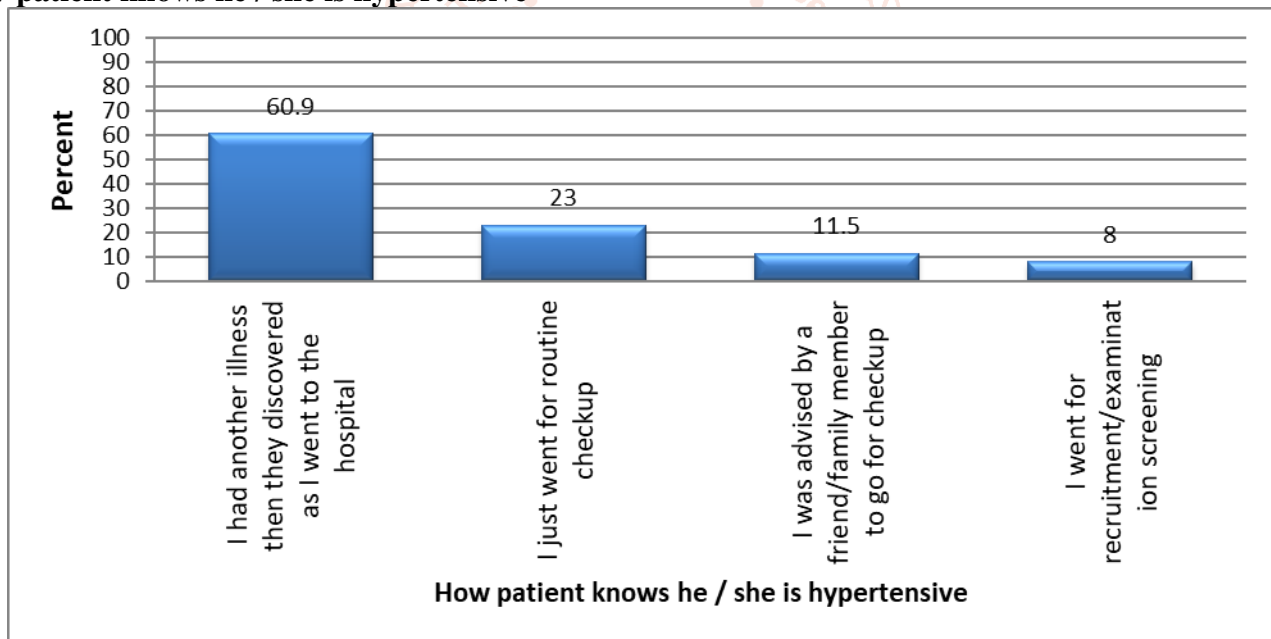
N=87

Figure 4: How patient knows he / she is hypertensive

Patients mostly had another illness then they discovered as they went to the hospital 60.9% (53). Other responses included blood pressure keeps increasing, regular blood pressure monitor, referral, while one does not know at all (figure 4).

Patient is receiving antihypertensive medication
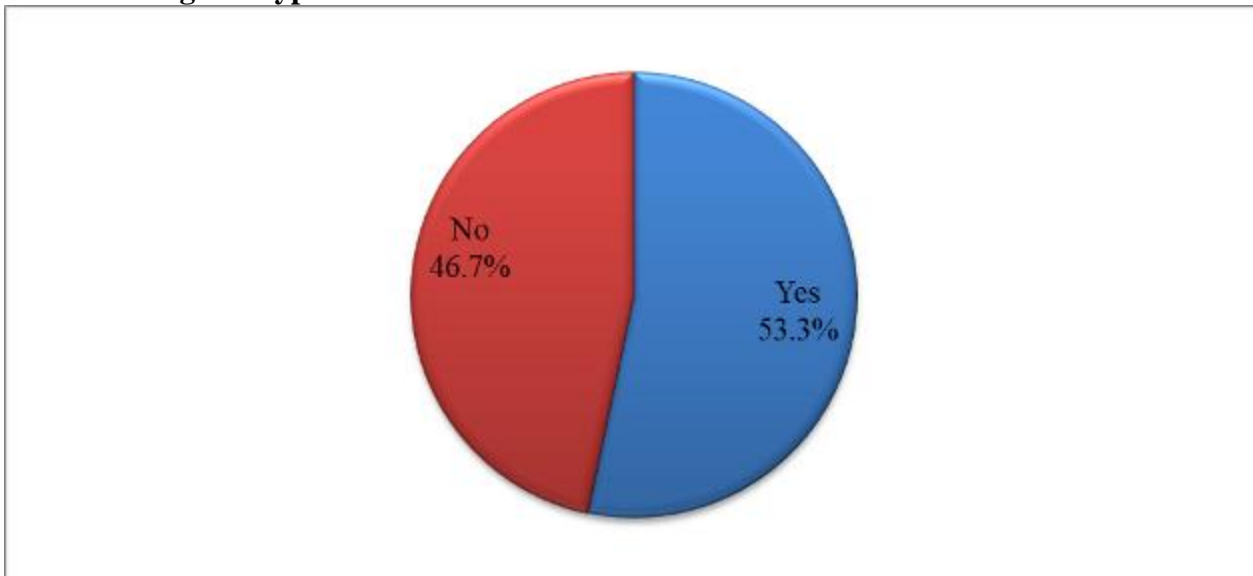
N=93

Figure 5: Patient is receiving antihypertensive medication

Roughly half of the patients 53.3% (80) were receiving antihypertensive medication (figure 5).

Patient knows the name of the medication he / she is taking
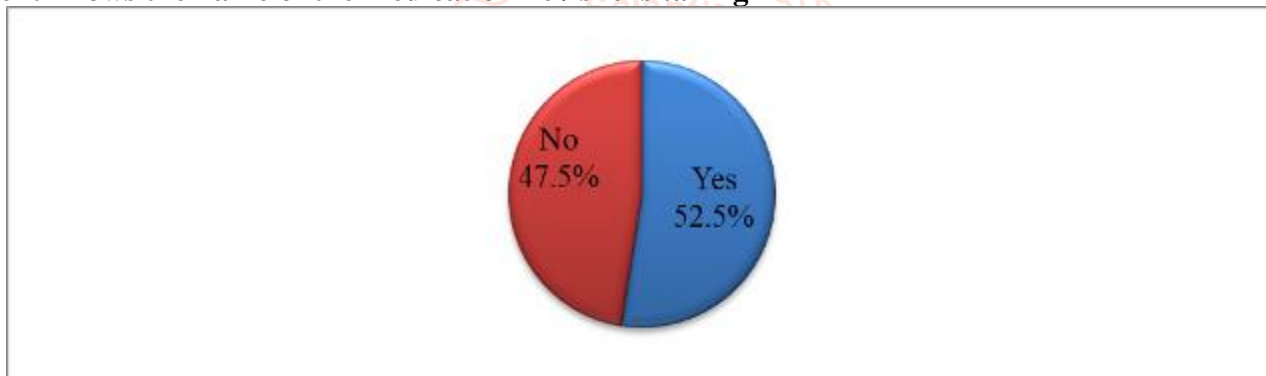
N=80

Figure 6: Patient knows the name of the medication he / she is taking

Roughly half of the patients 52.5% (42) knew the name of the medication they were taking (figure 6).

The names of the medications were really diversified as presented on the table 5.

Table 5: Medications taken by hypertensive patients

Medications	Frequency	Percent
Amlodipine 10 mg	3	2.0
Cardiovalam	2	1.3
Trandate	2	1.3
Amcodipine	1	.7
Amilodipine	1	.7
Amlodepene	1	.7
Amlodipine	1	.7
Amlodipine	1	.7
Amlolipine tablet	1	.7
Arbitl-h nefedipine	1	.7
Asa 81	1	.7
Aspirin cardia avas	1	.7
Calcium channel blocker	1	.7
Can't remember	1	.7
Cardensul, aldomet lersatar	1	.7
Cardio aspirin	1	.7

Cardioaspirin		1	.7
Cardiovalan		1	.7
Carturine tablets		1	.7
Catopoul		1	.7
Diuretic		1	.7
Diuretics calcium channel blockers		1	.7
Esidrex 25 mg, lisinopril 20 mg		1	.7
Hct		1	.7
Hct and nefidipine		1	.7
I am not receiving any medication yet		1	.7
I am taking Pandom D		1	.7
Loxen tranclate		1	.7
Loxen, atrapid		1	.7
Lozar-otenk		1	.7
Metformin		1	.7
Metformin hydrochloride		1	.7
Metformin, amlopine, glimepiride tabuto		1	.7
Nefedipine		1	.7
Nifedipine		1	.7
Nifedipine, aspirin 81		1	.7
Nifidipine		1	.7
Tegretol, aibitel, trandate, natinam		1	.7
Triazide, loop and potassium sparing		1	.7
Tritazide / amloclyxin		1	.7
Tritazide 5/25		1	.7
Total		104	100.0

Patient is convinced that the medication has helped
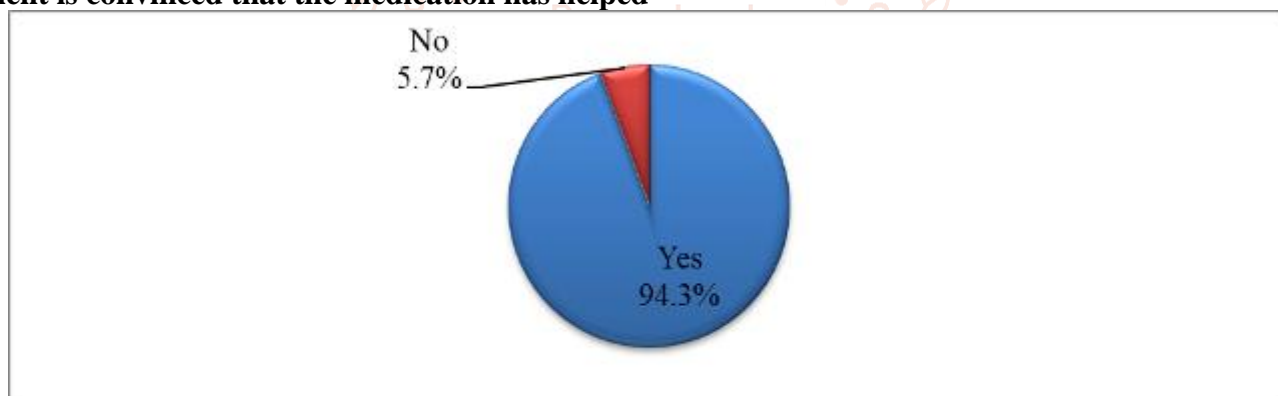
N=80

Figure 7: Patient is convinced that the medication has helped

Patients were generally convinced that the medication has helped 94.3% (50), figure 7.

Reasons why patients were convinced medication has helped

Patients mostly highlighted the perceived improvement in health, and blood pressure has reduced (table 6).

Table 6: Thematic analysis depicting reasons why patients were convinced medication has helped

Code	Code description	Grounding	Quotation
Improved health	Perceived improvement in health	30	*"I am much more better"* *"My condition has improved"* *"Because I am recovery fast"*
Lower BP	Blood pressure has reduced	23	*"Yes because I believe that my blood pressure has reduced"* *"Because it lowers my blood pressure"*
Stable BP	Blood pressure has stabilized	3	*"Because it is helping to stabilize my blood pressure"; "Because the drug regulates the blood pressure"*

Reduce headache	Headache has reduced	1	*"Headache and dizziness have reduced"*
Reduce dizziness	Dizziness has reduced	1	*"Headache and dizziness have reduced"*
Adequate prescriber	Medication prescribed by a professional	1	*"Because given by a professional health personnel who studies medications"*
Testimony	Efficiency of the medication testified by others who earlier used it	1	*"Because a lot of people who have used them have confirmed them"*

Complications
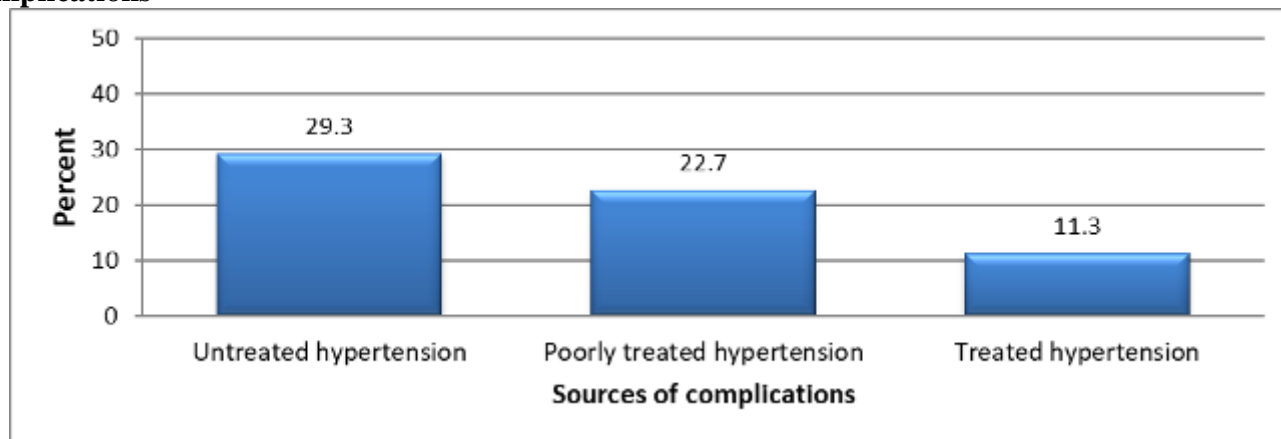
N=150

Figure 8: Sources of complications

Sources of complications were untreated hypertension (29.3%), poorly treated hypertension (22.7%) and treated hypertension (11.3%), being the least.

The complications are presented on table 60, with the most highlighted ones being stroke, heart failure / heart attack, death, eye problems / blindness, kidney problem for the top five (figure 8).

Table 7: Thematic analysis depicting the complications

Sources of complications	Complications	Grounding
Untreated hypertension		
	Stroke	28
	Eye problem / Blindness	5
	Death	5
	Heart failure / heart attack	13
	Organ failure	1
	Shock	4
	Kidney problem	5
Poorly treated hypertension		
	Stroke	3
	Death	7
	Skin pigmentation	1
	Secondary hypertension	2
	Resistant hypertension	1
	Paralysis	1
	Kidney problem / Chronic renal insufficiency	7
	Heart problem / Heart failure	9
	Metabolic syndrome	1
	Eye problem	2
	Dementia	1
	Diabetes	1
	Aneurysm	1
	Body weakness	1

Treated hypertension		
	Primary hypertension	3
	Reduced risk of stroke	2
	Reduced stress	1
	No complication / Good health / Get well and die naturally	5
	It can only be managed or controlled	1
	It allows blood vessels to relax / calcium channel blocker	3
	Low BP	1
	Don't know	1

Patient knowledge of types of hypertension
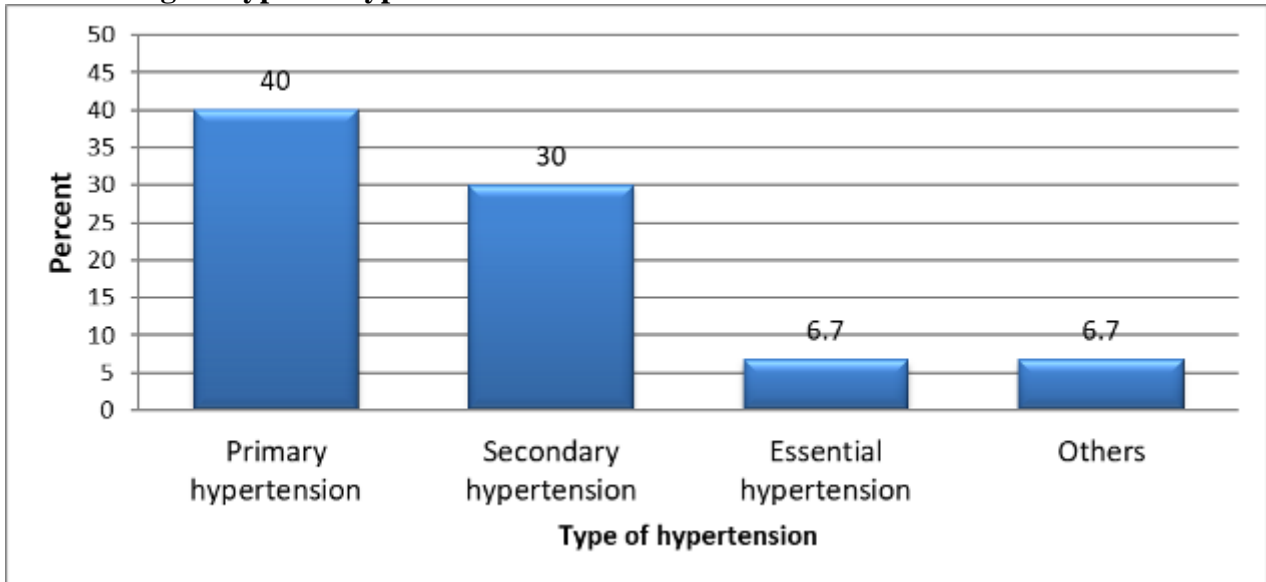
N=150

Figure 9: Patients' knowledge of types of hypertension

Primary hypertension was the most highlighted 40.0% (60), followed by secondary hypertension 30.0% (45), essential hypertension 6.7% (10), having the same proportion with others. Others included chronic hypertension, emergency hypertension, gestational hypertension, isolated systolic hypertension, malignant hypertension (figure 9).

Patient knowledge of if hypertension can be treated in the hospital
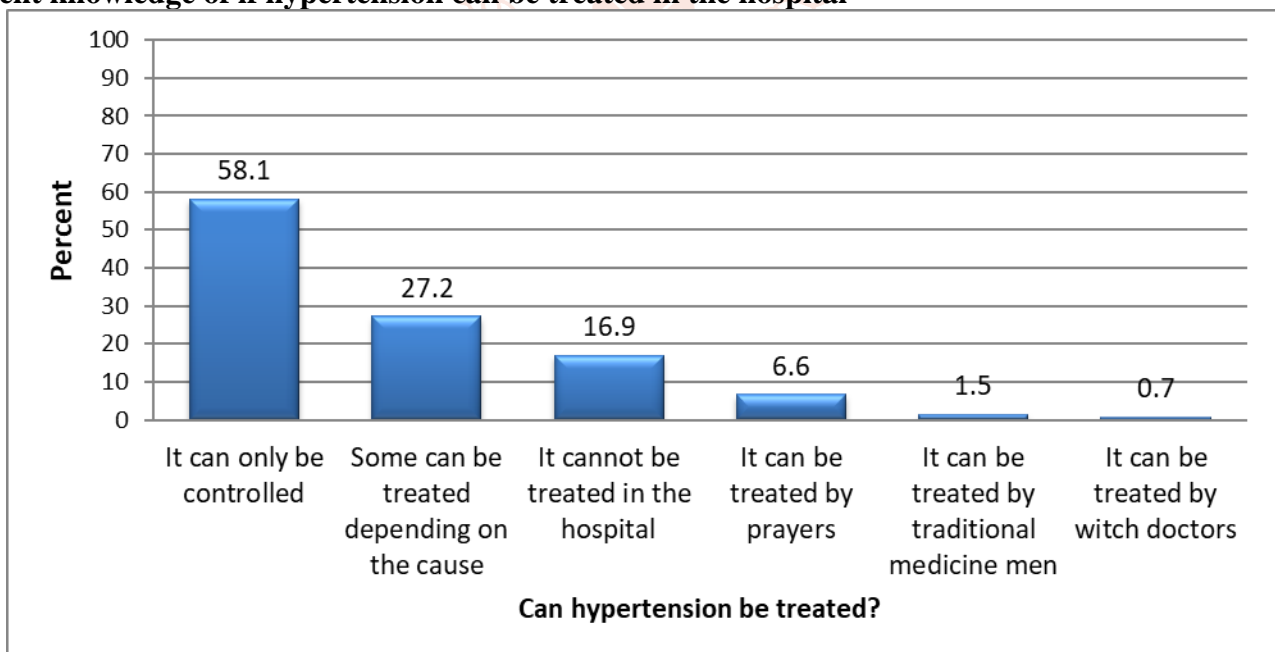
N=136

Figure 10: Patient knowledge of if hypertension can be treated in the hospital

Patients were mostly of the opinion that hypertension can only be controlled 58.1% (79), figure 10.

Patient perceive that hypertension can be prevented somehow
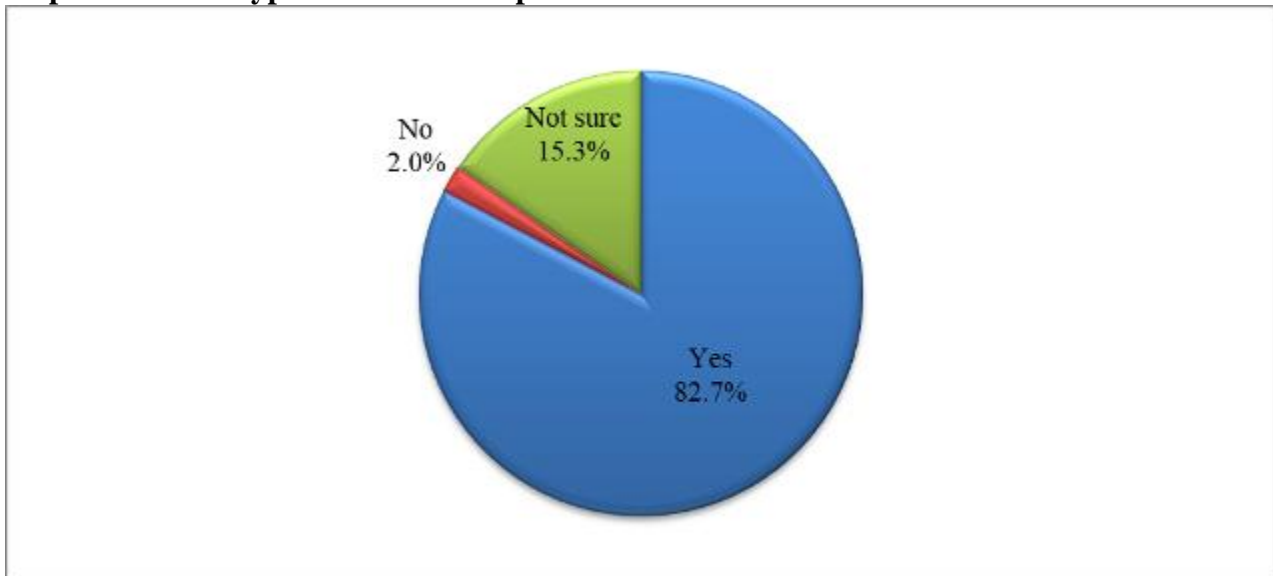
N=150

Figure 11: Patient perceive that hypertension can be prevented somehow

Patients were generally of the opinion that hypertension can be prevented somehow 82.7% (124), figure 11.

The reasons why patients perceived hypertension can be prevented somehow as presented on table 8 ranged from improving self-control of anger, temper, stress, thinking, taking enough rest; adequate treatment, taking treatment or medication regularly; health monitoring, regular checkup of state of health; healthy diet, not too much salt, sugar, oil, reading label of food packaged for quality control, consuming palm oil; controlling alcohol consumption; controlling smoking; lifestyle modification, adjusting the way we live; controlling one's weight to avoid overweight; and doing enough physical exercise.

Table 8: Thematic analysis depicting reasons why patients perceived hypertension can be prevented somehow

Code	Code description	Grounding	Quotations
Controlling temper/avoiding stress	Improving self-control of anger, temper, stress, thinking, taking enough rest	41	*"You can prevent it by controlling your anger"* *"yes no vex"; "through less stress";* *"less stressful and less thinking"* *"Managing your emotion"* *"By avoiding noisy area"* *"Avoid stress and promote rest"*
Adequate treatment	Adequate treatment, taking treatment or medication regularly	18	*"Yes by taking treatment regularly"* *"Through medication"* *"Follow instructions in hospitals"* *"By taking medication as prescribed by the doctor"*
Health monitoring	Health monitoring, regular checkup of state of health	5	*"Through regular checkup"* *"regular control in hospital"*
Healthy diet	Healthy diet, not too much salt, sugar, oil, reading label of food packaged for quality control, consuming palm oil	30	*"Eat healthy"; "reducing intake of salt or iodine"* *"eat balance diet"* *"Reading labels of food packages too to make sure they are health";* *"Reduce sweet intake"; "Reduce oil"* *"Avoid salt and maggi in food"* *"palm oil"*
Controlling alcohol	Controlling alcohol consumption	15	*"Avoid stress and alcohol"* *"stop or limit the rate of alcohol"*

Controlling smoking	Controlling smoking	5	*"Do not smoke"* *"Not smoking"*
lifestyle modification	lifestyle modification, adjusting the way we live	8	*"Life style modification"* *"lifestyle changes"*
Health weight	Controlling one's weight to avoid overweight	7	*"Maintain normal body weight"* *"controlling your weight"*
Physical exercise	Doing enough physical exercise	17	*"Exercises"* *"by doing sport"* *"Do a lot of exercise"*

No was because hypertension was perceived hereditary "*Most often hypertension exists in the gene of family making it difficult to control*".

Attitude
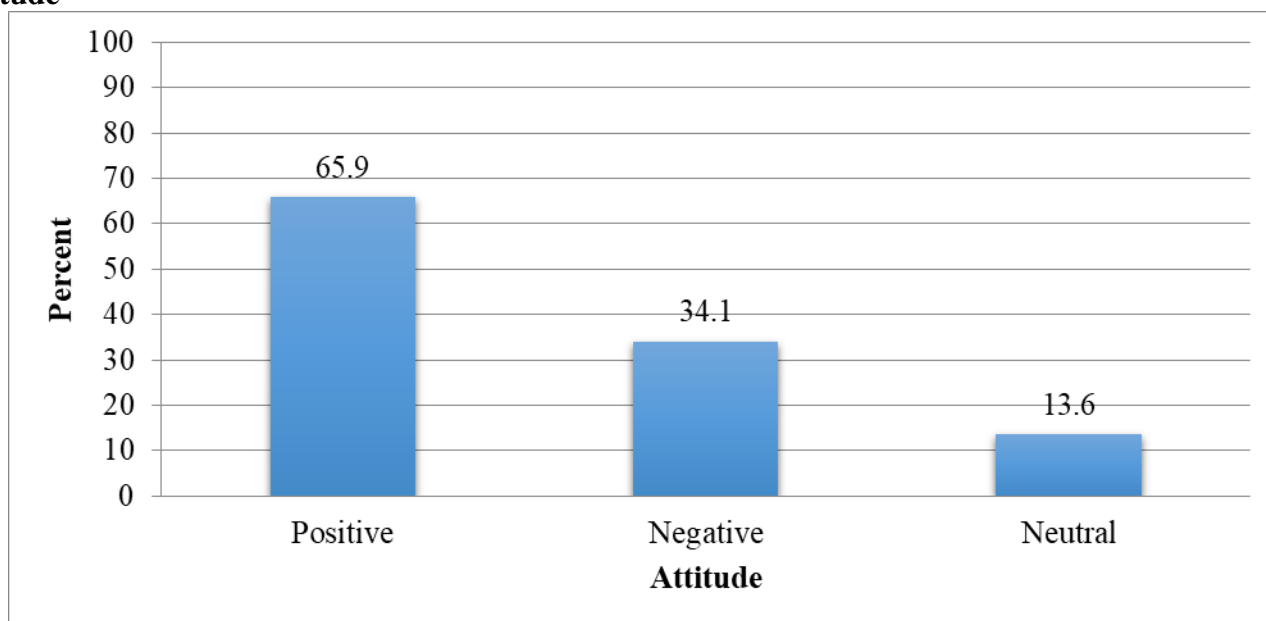
N=150

Figure 12: Patients' attitude toward hypertension

Patients in their majority weight (65.9%) had a positive attitude towards hypertension (figure 12).

Patients mostly take their medications as prescribed to prevent complications 81.3% (122) for the positive action, while concerning the negative action, they are scared of hypertension and its complications so they will check their BP regularly 84.0% (126).

Table 9: Patients' attitude toward hypertension

Items	Strongly agreed	agreed	Strongly disagreed	Disagreed	Neutral	Strongly agreed & agree	Strongly disagreed and disagree
I am scared of hypertension and its complications so I will check my BP regularly	64.7% (97)	19.3% (29)	3.3% (5)	4.0% (6)	8.7% (13)	84.0% (126)	7.3% (11)
I am scared to check my BP least they discover hypertension and start giving medication which I do not want	12.7% (19)	15.3% (23)	27.3% (41)	35.3% (53)	9.3% (14)	28.0% (42)	62.7% (94)
If I start taking antihypertensive, I will not stop. So it is not good to be checking frequently	16.0% (24)	10.7% (16)	27.3% (41)	36.7% (55)	9.3% (14)	26.7% (40)	64.0% (96)

Hypertension cannot be treated so why spend money on medications	7.3% (11)	9.3% (14)	26.7% (40)	45.3% (68)	11.3% (17)	16.7% (25)	72.0% (108)
Hypertension does not bother me, so I don't have to treat it	6.7% (10)	6.0% (9)	34.7% (52)	43.3% (65)	9.3% (14)	12.7% (19)	78.0% (117)
I take medications when I can afford	9.3% (14)	24.0% (36)	20.7% (31)	35.3% (53)	10.7% (16)	33.3% (50)	56.0% (84)
I take my medications as prescribed to prevent complications*	55.3% (83)	26.0% (39)	2.7% (4)	6.0% (9)	10.0% (15)	81.3% (122)	8.7% (13)
I sometimes forget to take my medications	16.7% (25)	44.0% (66)	6.7% (10)	16.7% (25)	16.0% (24)	60.7% (91)	23.3% (35)
Need someone to be reminding me	15.3% (23)	42.0% (63)	10.0% (15)	18.7% (28)	14.0% (21)	57.3% (86)	28.7% (43)
I resort to herbs because I lack money	11.3% (17)	28.0% (42)	16.7% (25)	24.7% (37)	19.3% (29)	39.3% (59)	41.3% (62)
I can be self-disciplined and refrain from alcohol and follow medical instructions as given concerning medications and life style modification*	44.0% (66)	28.7% (43)	8.7% (13)	4.7% (7)	14.0% (21)	72.7% (109)	13.3% (20)
I am still young I cannot have hypertension now	7.3% (11)	10.7% (16)	36.7% (55)	36.0% (54)	9.3% (14)	18.0% (27)	72.7% (109)
I like partying so I do not want to take medications	9.3% (14)	11.3% (17)	30.7% (46)	38.0% (57)	10.7% (16)	20.7% (31)	68.7% (103)
I am an active person*	34.0% (51)	28.0% (42)	10.7% (16)	12.7% (19)	14.7% (22)	62.0% (93)	23.3% (35)
I like doing sports to keep fit*	34.7% (52)	34.7% (52)	6.7% (10)	11.3% (17)	12.7% (19)	69.3% (104)	18.0% (27)
I use my car all the time	8.7% (13)	13.3% (20)	22.0% (33)	37.3% (56)	18.7% (28)	22.0% (33)	59.3% (89)
I trek always*	22.7% (34)	33.3% (50)	13.3% (20)	12.7% (19)	18.0% (27)	56.0% (84)	26.0% (39)
I read labels on processed foods before I consume*	29.3% (44)	26.7% (40)	16.7% (25)	13.3% (20)	14.0% (21)	56.0% (84)	30.0% (45)
I enjoy a sedentary life	11.3% (17)	17.3% (26)	24.7% (37)	26.7% (40)	20.0% (30)	28.7% (43)	51.3% (77)
I don't bother because I am not sick	5.3% (8)	17.3% (26)	18.7% (28)	37.3% (56)	21.3% (32)	22.7% (34)	56.0% (84)
						Negative	Positive
MRS	13.1% (394)	16.4% (491)	24.2% (725)	32.8% (983)	13.6% (407)	34.1% (885)	65.9% (1708)

*MRA: Reversed conceptual polarization

Association between patients' attitude towards hypertension and socio-demographic characteristics

Table 10: Association between patients' attitude towards hypertension and socio-demographic characteristics

Socio-demographic characteristics	Categories	Patients' attitude towards hypertension			Total Counts	χ2-tes
		Negative	Positive	Neutral		
Sex	Male	354	571	175	1100	χ2=0.843 P=0.359
		32.2%	51.9%	15.9%		
	Female	531	1137	231	1899	
		28.0%	59.9%	12.2%		
Marital status	Married	565	1124	231	1920	χ2=0.942 P=0.332
		29.4%	58.5%	12.0%		
	Single	210	337	93	640	
		32.8%	52.7%	14.5%		
	Widowed / Widower	55	137	8	200	
		27.5%	68.5%	4.0%		
	Come-we-stay	55	110	74	239	
		23.0%	46.0%	31.0%		
Level of education	No formal education	342	699	158	1199	χ2=0.238 P=0.625
		28.5%	58.3%	13.2%		
	FSLC	94	132	94	320	
		29.4%	41.3%	29.4%		
	Secondary education	85	156	59	300	
		28.3%	52.0%	19.7%		
	High school	117	239	24	380	
		30.8%	62.9%	6.3%		
	Tertiary education	247	482	71	800	
		30.9%	60.3%	8.9%		
3Category of occupation	Sedentary	512	987	260	1759	χ2=0.080 P=0.863
		29.1%	56.1%	14.8%		
	Not sedentary	373	721	146	1240	
		30.1%	58.1%	11.8%		
Age collapsed	Equal or greater than 21-35	256	480	124	860	χ2=2.759 P=0.097
		29.8%	55.8%	14.4%		
	Greater than 35-50	199	341	120	660	
		30.2%	51.7%	18.2%		
	Greater than 50-65	315	658	106	1079	
		29.2%	61.0%	9.8%		
	Greater than 65	115	229	56	400	
		28.8%	57.3%	14.0%		
Category of health facility	Public	446	877	176	1499	χ2=1.315 P=0.251
		29.8%	58.5%	11.7%		
	Private	439	831	230	1500	
		29.3%	55.4%	15.3%		
Income collapsed	Below 50,000	486	956	257	1699	χ2=0.042 P=0.837
		28.6%	56.3%	15.1%		
	From 50,000 to 100,000	239	455	126	820	
		29.1%	55.5%	15.4%		
	Greater than 100000	160	297	23	480	
		33.3%	61.9%	4.8%		

Number of children under care collapsed	1	234	466	60	760	χ2=3.026 P=0.082
		30.8%	61.3%	7.9%		
	2-3	210	443	187	840	
		25.0%	52.7%	22.3%		
	Equal or greater than	441	799	159	1399	
		31.5%	57.1%	11.4%		
Religion collapsed	Christian	823	1611	385	2819	χ2=0.618 P=0.432
		29.2%	57.1%	13.7%		
	Others	62	97	21	180	
		34.4%	53.9%	11.7%		

Attitude was not significantly dependent of any demographic factor (P>0.05), as presented on table 10. Even after controlling for each other, no predictor of demographic characteristics surfaced as significant predictor of attitude (P>0.05), as depicted by table 11.

Table 11: Binary Logistic Regression depicting Wald statistic with the significant and critical predictors of patients' attitude towards hypertension, controlled for each other's

Predictors	B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I.for EXP(B)	
							Lower	Upper
Sex	.305	.375	.664	1	.415	1.357	.651	2.829
Marital status	.292	.201	2.106	1	.147	1.339	.903	1.985
Level of education	.003	.111	.001	1	.975	1.003	.807	1.248
Category of occupation	.127	.359	.125	1	.724	1.135	.562	2.292
Category of health facility	.316	.345	.837	1	.360	1.371	.697	2.696
Age collapsed	.188	.175	1.153	1	.283	1.206	.857	1.699
Income collapsed	.076	.235	.105	1	.746	1.079	.681	1.709
Number of children under care collapsed	.406	.239	2.883	1	.090	1.500	.939	2.396
Religion collapsed	.854	.775	1.214	1	.271	2.350	.514	10.743

Practices by patients
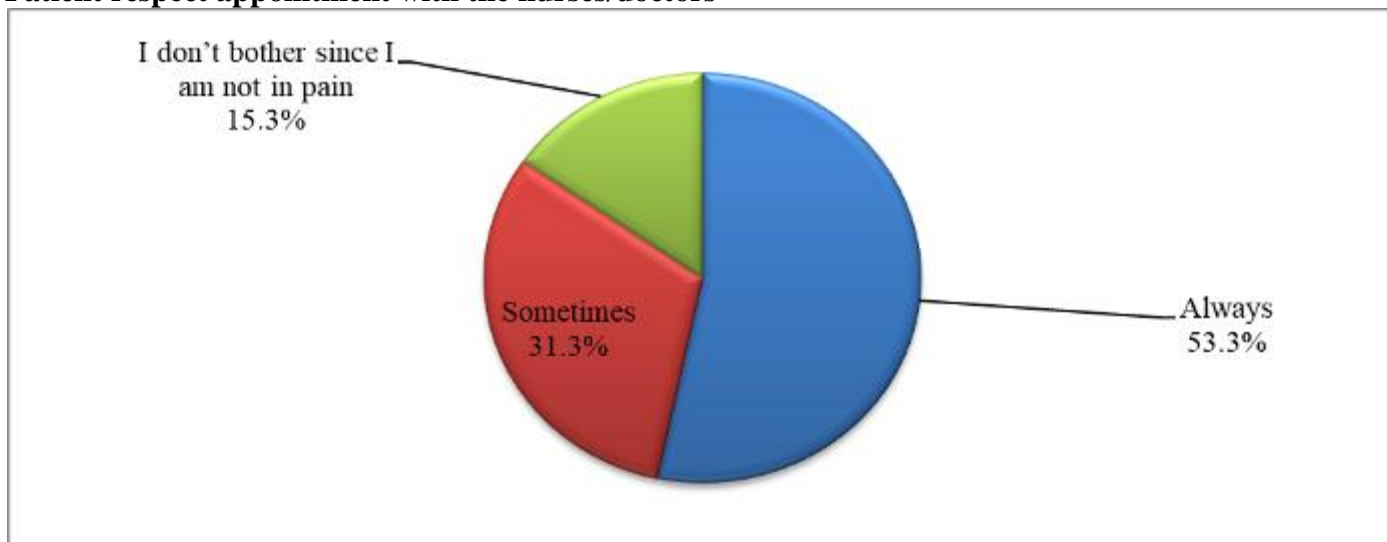**Checking weight**
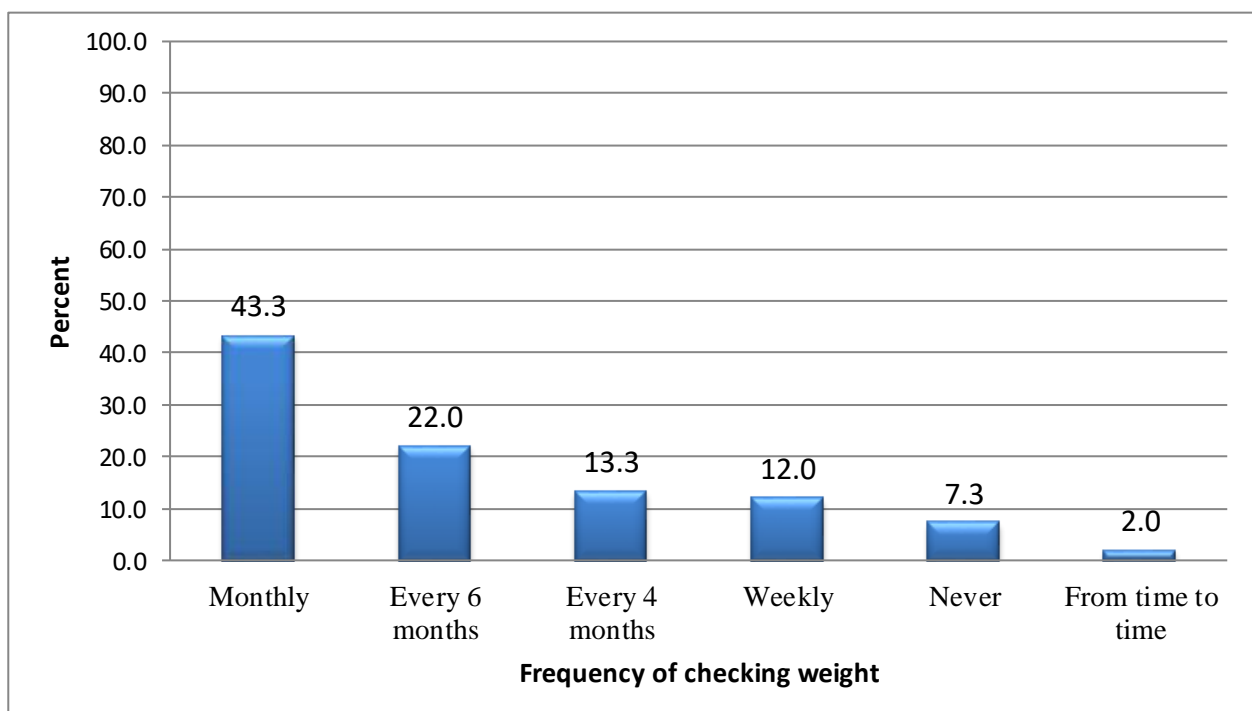
N=150
Figure 13: How frequently patients check their weight

Patients mostly check their weight monthly 43.3% (65), figure 13.

Patient respect appointment with the nurses/doctors

N=150

Figure 14: Patient respect appointment with the nurses/doctors

Patients in their weak majority always respect appointment by doctor 53.3% (80), figure 14.

Actions taken by patient do after skipping medication
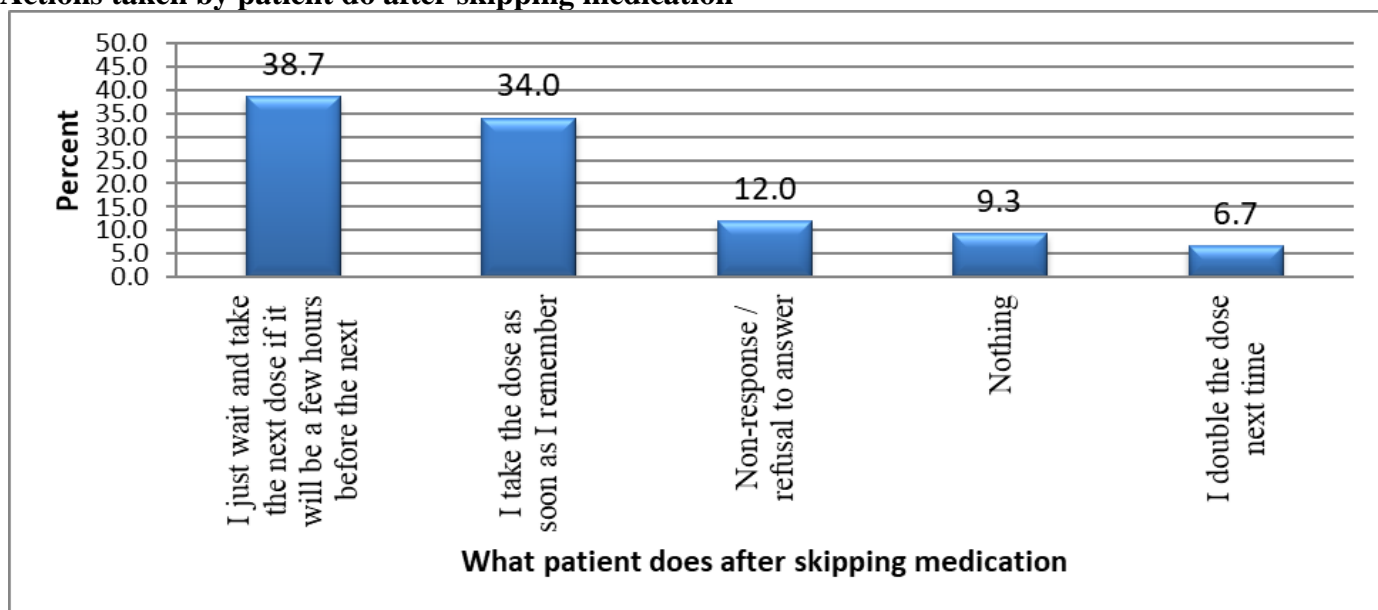
N=150

Figure 15: What patient does after skipping medication

After skipping medication, patients mostly just wait and take the next dose if it will be a few hours before the next (38.7%). This was followed by those that take the dose as soon as they remember (34.0%), as presented on figure 15.

What patient does after experiencing side effects of a prescribed medication for hypertension

N=150

Figure 16: What patient does after experiencing side effects of a prescribed medication for hypertension

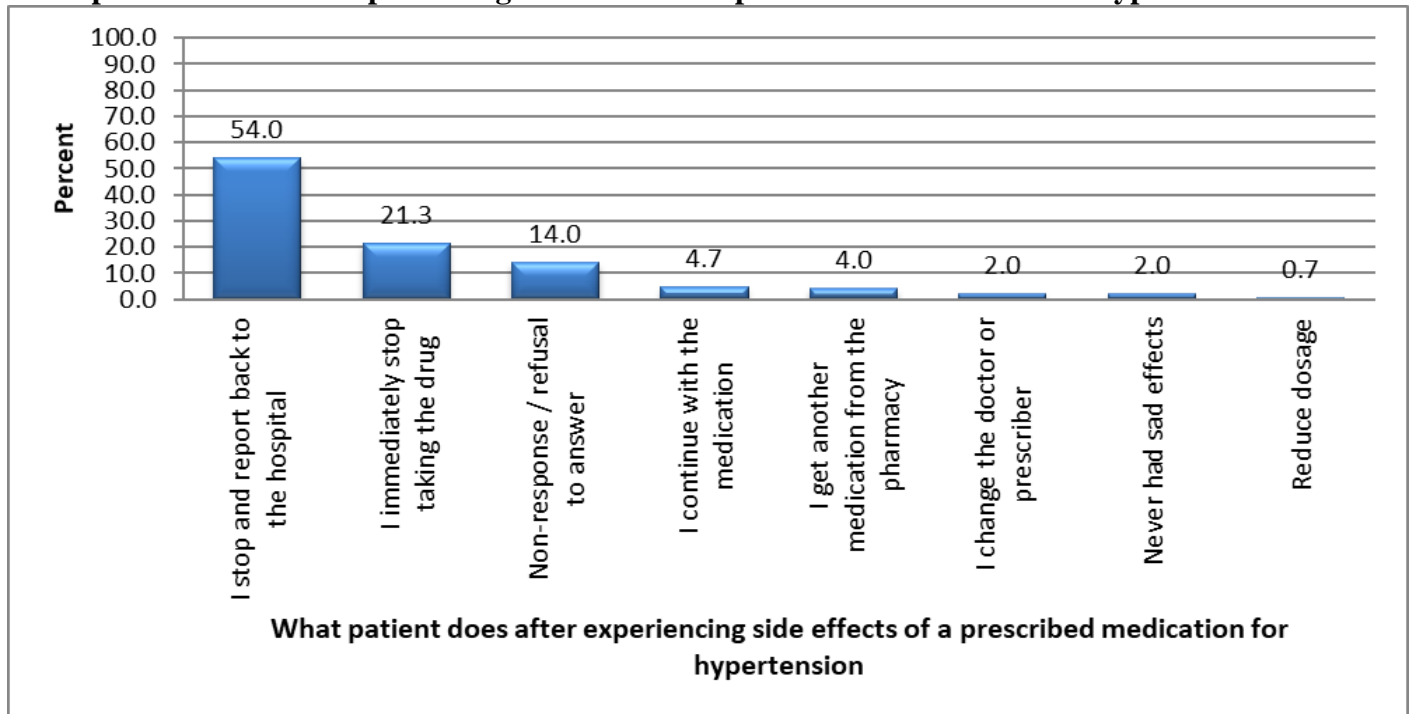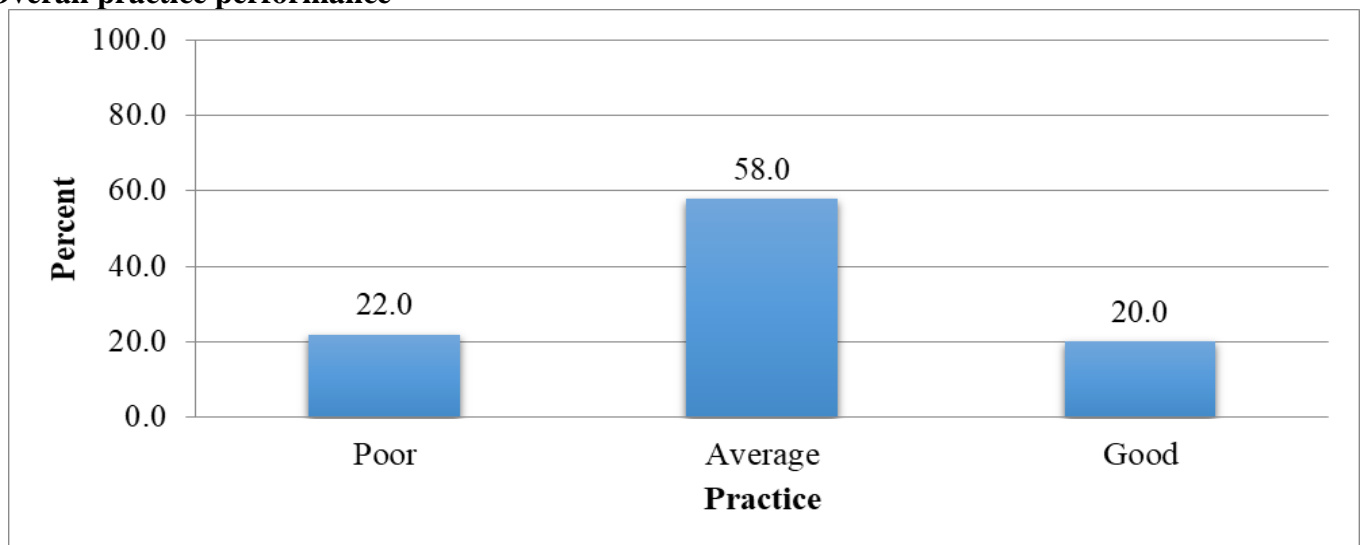After experiencing side effects of a prescribed medication for hypertension, patients mostly stop and report back to the hospital 54.0% (81), figure 16.

Overall practice performance

N=150

Figure 17: Practice by hypertensive patients

A weak majority of patients averagely practices good recommendations for hypertensive patients 58.0% (87) as presented on figure 17.

Association between patients' practices towards hypertension and socio-demographic characteristics

Practice was significantly associated with category of health facility (P=0.001). Patients from public health facilities had significantly higher percentage of good practice 32.0% (24), as compared to 8.0% (6) for those from private health facilities (table 12).

Practice was equally significantly associated with income (P=0.049) with those with income below 50000 Frs having the lowest percentage of good practice 14.1% (12), table 12.

When controlled for each other, only level of education surfaced as significant predictor of practice (P=0.048). This is explained by the increased income with level of education as most of those with income above 100000

Frs were found among those that have attained tertiary level and also mostly attend public health facilities. In fact, it is worth noting that the two major reference hospital sampled were public and are generally expensive as corollary of the quality of care and facilities (table 13).

Table 12: Association between patients' practices towards hypertension and socio-demographic characteristics

Socio-demographic characteristics	Categories	Patients' practice towards hypertension			N	χ2-tes
		Poor	Good	Average		
Sex	Male	15	31	9	55	χ2=1.712 P=0.425
		27.3%	56.4%	16.4%		
	Female	18	56	21	95	
		18.9%	58.9%	22.1%		
Marital status	Married	19	55	22	96	χ2=4.161 P=0.655
		19.8%	57.3%	22.9%		
	Single	8	20	4	32	
		25.0%	62.5%	12.5%		
	Widowed / Widower	4	5	1	10	
		40.0%	50.0%	10.0%		
	Come-we-stay	2	7	3	12	
		16.7%	58.3%	25.0%		
Level of education	No formal education	9	36	15	60	χ2=13.946 P=0.083
		15.0%	60.0%	25.0%		
	FSLC	4	10	2	16	
		25.0%	62.5%	12.5%		
	Secondary education	2	13	0	15	
		13.3%	86.7%	0.0%		
	High school	4	9	6	19	
		21.1%	47.4%	31.6%		
	Tertiary education	14	19	7	40	
		35.0%	47.5%	17.5%		
Category of occupation	Sedentary	21	50	17	88	χ2=0.437 P=0.804
		23.9%	56.8%	19.3%		
	Not sedentary	12	37	13	62	
		19.4%	59.7%	21.0%		
Age collapsed	Equal or greater than 21-35	11	26	6	43	χ2=2.268 P=0.641
		25.6%	60.5%	14.0%		
	Greater than 35-50	4	20	9	33	
		12.1%	60.6%	27.3%		
	Greater than 50-65	14	30	10	54	
		25.9%	55.6%	18.5%		
	Greater than 65	4	11	5	20	
		20.0%	55.0%	25.0%		
Category of health facility	Public	16	35	24	75	χ2=14.152 P=0.001
		21.3%	46.7%	32.0%		
	Private	17	52	6	75	
		22.7%	69.3%	8.0%		
Income collapsed	Below 50,000	21	52	12	85	χ2=9.208 P=0.049
		24.7%	61.2%	14.1%		
	From 50,000 to 100,000	9	18	14	41	
		22.0%	43.9%	34.1%		
	Greater than 100000	3	17	4	24	
		12.5%	70.8%	16.7%		

Number of children under care collapsed	1	11	21	6	38	χ2=2.122 P=0.713
		28.9%	55.3%	15.8%		
	2-3	9	23	10	42	
		21.4%	54.8%	23.8%		
	Equal or greater than	13	43	14	70	
		18.6%	61.4%	20.0%		
Religion collapsed	Christian	29	84	28	141	χ2=3.220 P=0.200
		20.6%	59.6%	19.9%		
	Others	4	3	2	9	
		44.4%	33.3%	22.2%		

Table 13: Binary Logistic Regression depicting Wald statistic with the significant and critical predictors of patients' practices towards hypertension, controlled for each other's

| Predictors | B | S.E. | Wald | df | Sig. | Exp(B) | 95% C.I.for EXP(B) | |
							Lower	Upper
Sex	.384	.443	.752	1	.386	1.469	.616	3.503
Marital status	-.004	.229	.000	1	.986	.996	.636	1.559
Level of education	-.231	.134	2.955	1	.048	.794	.610	1.033
Category of occupation	.053	.438	.015	1	.904	1.055	.447	2.490
Category of health facility	.004	.419	.000	1	.992	1.004	.442	2.281
Age collapsed	-.191	.214	.794	1	.373	.826	.543	1.257
Income collapsed	.501	.311	2.606	1	.106	1.651	.898	3.034
Number of children under care collapsed	.180	.280	.413	1	.521	1.197	.691	2.072
Religion collapsed	-.912	.776	1.383	1	.240	.402	.088	1.838

Relationship between knowledge, attitude and practice

There was no significant relationship between knowledge, practice and attitude (P>0.05), table 14.

Table 14: Relationship between knowledge, attitude and practice

			Practice score	Sum of score attitude	Know hypertension
Spearman's rho	Practice score	R	1.000	.135	-.132
		P-value	.	.099	.109
		N	150	150	150
	Sum of score attitude	R	.135	1.000	-.098
		P-value	.099	.	.231
		N	150	150	150
	Know hypertension	R	-.132	-.098	1.000
		P-value	.109	.231	.
		N	150	150	150

Satisfaction with care

Patients were mostly satisfied with reception by the nurse 76.7% (115), while those that perceived that the nurse was not very busy so they could freely asked their question were fewest 36.0% (54), as presented on table 15.
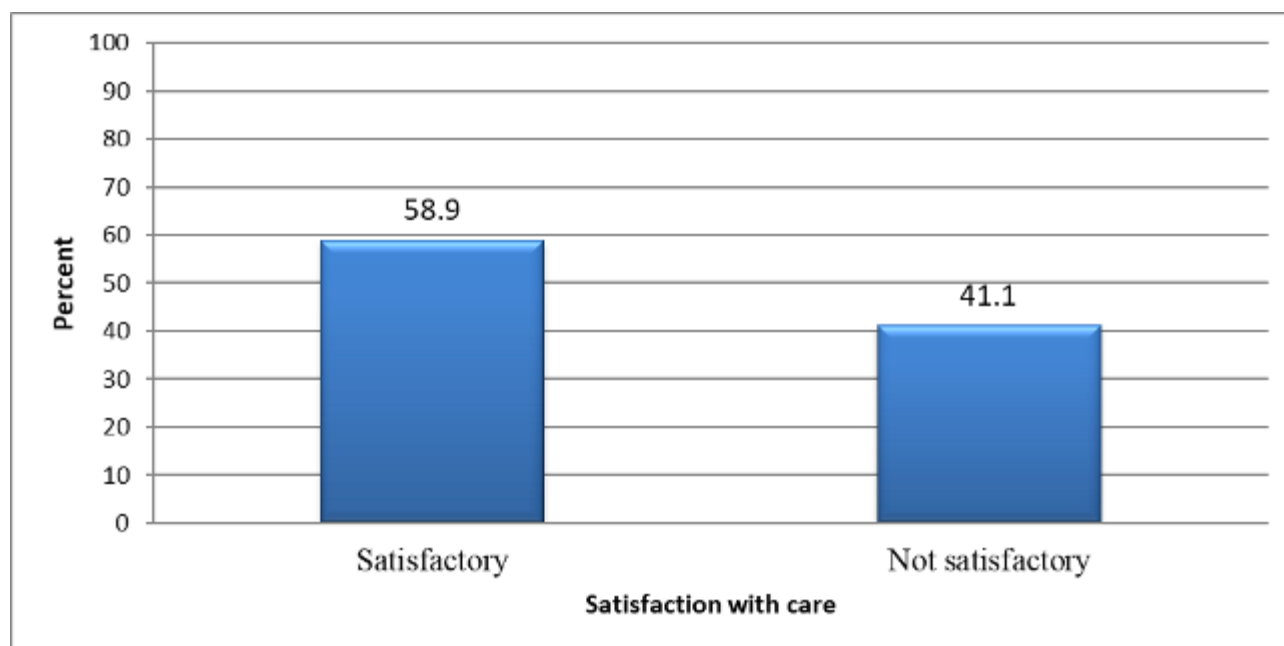
Table 15: Patient perceptions of the kinds of care / Patient satisfaction with care

Items	Very satisfied	satisfied	Neutral	dissatisfied	Very dissatisfied	Very satisfied and satisfied	Dissatisfied and Very dissatisfied
How satisfied were you with reception by the nurse?	38.0% (27)	38.7% (58)	22.0% (33)	1.3% (2)	0.0% (0)	76.7% (115)	1.3% (2)
How satisfied were you with the waiting time when you went for your BP control?	26.7% (40)	38.7% (58)	28.0% (42)	4.7% (7)	2.0% (3)	65.3% (98)	6.7% (10)

The explanation given to me by the nurse about my condition was understandable	33.3% (50)	40.0% (60)	23.3% (35)	2.7% (4)	0.7% (1)	73.3% (110)	3.3% (5)
I felt dignified in front of the nurse	30.7% (46)	31.3% (47)	28.7% (43)	9.3% (14)	% ()	62.0% (93)	9.3% (14)
I could not buy my medication and the nurse understood it	25.3% (38)	16.0% (24)	42.0% (63)	14.0% (21)	2.7% (4)	41.3% (62)	16.7% (19)
The side effects of the drugs were explained to me	34.7% (52)	30.0% (45)	22.7% (34)	12.7% (19)	0.0% (0)	64.7% (97)	12.7% (29)
I was prescribed another drug because I could not afford an expensive drug	22.0% (33)	25.3% (38)	33.3% (50)	16.7% (25)	2.7% (4)	47.3% (71)	19.3% (29)
The nurse was very busy so I did not want to bother her with many questions*	8.7% (13)	12.0% (18)	43.3% (65)	32.7% (49)	3.3% (5)	20.7% (31)	36.0% (54)
I was given a talk on how to prevent hypertension	39.3% (59)	28.7% (43)	28.7% (43)	3.3% (5)	0.0% (0)	68.0% (102)	3.3% (5)
The nurse was not very friendly, she looked tensed*	12.7% (19)	10.0% (15)	40.7% (61)	29.3% (44)	7.3% (11)	22.7% (34)	36.7% (55)
						Satisfactory	Not satisfactory
MRS	26.1% (391)	31.1% (466)	31.3% (469)	8.7% (130)	2.9% (44)	58.9% (857)	41.1% (599)

*MRA: Reversed conceptual polarization

N=150

Figure 18: Patient perceptions of the kinds of care / Patient satisfaction with care

Patients in their weak majority weight (58.9%) were satisfied with care (figure 18).

Association between satisfaction with health care and socio-demographic characteristics

Patients' appreciation of quality of care was significantly dependent only of category of health facility (p=0.010), whereby they were more satisfied in private health facilities (60.8%) than in their public counterpart (53.5%), as presented on table 16.

When controlled for each other's, none of the indicators surfaced as significant predictor of satisfaction with care (P>0.05), table 17.

Table 16: Association between satisfaction with health care and socio-demographic characteristics

Socio-demographic characteristics	Categories	Satisfaction with care			Total Counts	χ2-tes
		Satisfied	Neutral	Dissatisfied		
Sex	Male	286	204	60	550	χ2=2.422 P=0.120
		52.0%	37.1%	10.9%		
	Female	571	265	114	950	
		60.1%	27.9%	12.0%		
Marital status	Married	564	287	109	960	χ2=.054 P=0.817
		58.8%	29.9%	11.4%		
	Single	170	109	41	320	
		53.1%	34.1%	12.8%		
	Widowed / Widower	71	20	9	100	
		71.0%	20.0%	9.0%		
	Come-we-stay	52	53	15	120	
		43.3%	44.2%	12.5%		
Level of education	No formal education	359	169	72	600	χ2=.691 P=0.406
		59.8%	28.2%	12.0%		
	FSLC	69	74	17	160	
		43.1%	46.3%	10.6%		
	Secondary education	78	60	12	150	
		52.0%	40.0%	8.0%		
	High school	92	76	22	190	
		48.4%	40.0%	11.6%		
	Tertiary education	259	90	51	400	
		64.8%	22.5%	12.8%		
Category of occupation	Sedentary	517	253	110	880	χ2=1.517 P=0.218
		58.8%	28.8%	12.5%		
	Not sedentary	340	216	64	620	
		54.8%	34.8%	10.3%		
Age collapsed	Equal or greater than 21-35	257	119	54	430	χ2=2.185 P=0.139
		59.8%	27.7%	12.6%		
	Greater than 35-50	171	124	35	330	
		51.8%	37.6%	10.6%		
	Greater than 50-65	345	125	70	540	
		63.9%	23.1%	13.0%		
	Greater than 65	84	101	15	200	
		42.0%	50.5%	7.5%		
Category of health facility	Public	401	260	89	750	χ2=6.667 P=0.010
		53.5%	34.7%	11.9%		
	Private	456	209	85	750	
		60.8%	27.9%	11.3%		
Income collapsed	Below 50,000	489	283	78	850	χ2=1.591 P=0.207
		57.5%	33.3%	9.2%		
	From 50,000 to 100,000	218	123	69	410	
		53.2%	30.0%	16.8%		
	Greater than 100000	150	63	27	240	
		62.5%	26.3%	11.3%		

Number of children under care collapsed	1	239	91	50	380	χ2=3.032 P=0.082
		62.9%	23.9%	13.2%		
	2-3	224	141	55	420	
		53.3%	33.6%	13.1%		
	Equal or greater than	394	237	69	700	
		56.3%	33.9%	9.9%		
Religion collapsed	Christian	799	450	161	1410	χ2=1.875 P=0.171
		56.7%	31.9%	11.4%		
	Others	58	19	13	90	
		64.4%	21.1%	14.4%		

Table 17: Binary Logistic Regression depicting Wald statistic with the significant and critical predictors of patients' perception of care from nurses, controlled for each other's

Predictors	B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I.for EXP(B)	
							Lower	Upper
Sex	-.623	.397	2.465	1	.116	.536	.246	1.167
Marital status	.032	.205	.024	1	.876	1.032	.691	1.542
Level of education	-.225	.121	3.457	1	.063	.798	.630	1.012
Category of occupation	.335	.370	.819	1	.366	1.398	.677	2.887
Category of health facility	-.328	.361	.829	1	.363	.720	.355	1.460
Age collapsed	-.417	.185	5.079	1	.094	.659	.458	.947
Income collapsed	.365	.250	2.121	1	.145	1.440	.881	2.353
Number of children under care collapsed	-.431	.254	2.873	1	.090	.650	.395	1.070
Religion collapsed	-1.409	.802	3.084	1	.079	.244	.051	1.178

Test of research hypotheses

Research hypothesis one: Patients with low monthly income are not satisfied with care by nures

There was no significant association between satisfaction with health care by nurses an income, thus rejecting the hypothesis here stated (P=0.406). This therefore implies that nurse care does not depend on the income level of patients or is not discriminative (table 18).

Table 18: Association between income and satisfaction with health care

Income	Stats	Satisfaction with health care by nurses		Total
		Yes	No	
Below 50,000	n	42	43	85
	%	49.4%	50.6%	100.0%
From 50,000 to 100,000	n	16	25	41
	%	39.0%	61.0%	100.0%
Greater than 100000	n	9	15	24
	%	37.5%	62.5%	100.0%
Total	n	67	83	150
	%	44.7%	55.3%	100.0%

χ2-test: χ2=1.801; df=2; P=0.406

Research hypothesis two: Patients have no contrary views on prescribed medication issued to them by prescribers

With respect to drug prescription
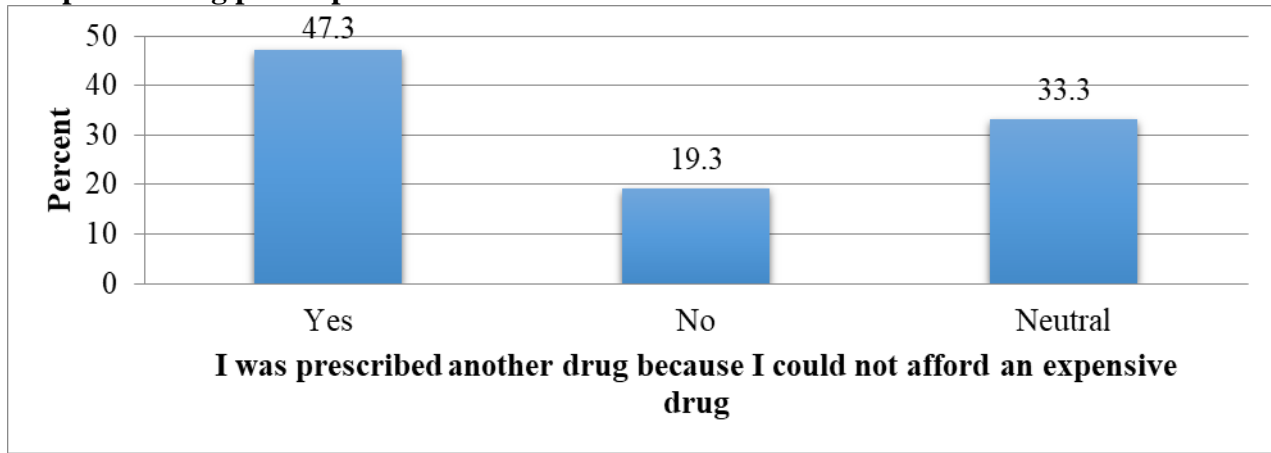
χ2-test: χ2=11.879; df=2; P=0.003

Figure 19: I was prescribed another drug because I could not afford an expensive drug

With respect to drug prescription, this hypothesis is accepted (P=0.003), thus implying that drug prescription is not standardized and depends on patients' demographic characteristics, notably income level (figure 19).

With respect to prescriber

As for the prescriber, medication was said to be prescribed by a doctor by 90.8% (89). Considering an expected proportion of 100%, this difference was significant (χ2-test: χ2=16.790; df=1; P=0.000), thus accepting the hypothesis with respect to this aspect. This therefore implies that statistically, patients were of the opinion that medication was not always prescribed by a doctor.

Research hypothesis three: Younger patients are not aware of preventive measures of hypertension.

With respect to hypertension can be prevented somehow

A strong majority of patients perceived that hypertension can be prevented somehow and this trend cuts across age ranges, ranging from 78.8% to 85.0% but this difference is not statistically significant (P=0.980). This hypothesis is then rejected with respect to this aspect (table 19).

Table 19: Association between age and the perception that hypertension can be prevented somehow

Age	Stats	Patient perceive that hypertension can be prevented somehow			Total
		Yes	No	Not sure	
Equal or greater than 21-35	n	35	1	7	43
	%	81.4%	2.3%	16.3%	100.0%
Greater than 35-50	n	26	1	6	33
	%	78.8%	3.0%	18.2%	100.0%
Greater than 50-65	n	46	1	7	54
	%	85.2%	1.9%	13.0%	100.0%
Greater than 65	n	17	0	3	20
	%	85.0%	0.0%	15.0%	100.0%
Total	n	124	3	23	150
	%	82.7%	2.0%	15.3%	100.0%

χ2-test: χ2=1.126; df=6; P=0.980

With respect to knowledge of preventive measures

Knowledge of preventive measures was not significantly associated with age (P=0.097). The hypothesis here stated is then rejected with respect to this aspect (table 20).

Table 20: Association between knowledge of preventive measures and age

Age	Stats	knowledge of preventive measures			Total
		No	Yes	Neutral	
Equal or greater than 21-35	n	256	480	124	860
	%	29.8%	55.8%	14.4%	
Greater than 35-50	n	199	341	120	660
	%	30.2%	51.7%	18.2%	
Greater than 50-65	n	315	658	106	1079
	%	29.2%	61.0%	9.8%432	
Greater than 65	n	115	229	56	400
	%	28.8%	57.3%	14.0%	

$\chi 2$-test: χ^2=2.579; df=6; P=0.097

Discussion

Knowledge on hypertension

Patients generally knew what hypertension is. They described hypertension as mostly the rise in blood pressure. As for the types of hypertension, primary hypertension was the most highlighted, followed by secondary hypertension, essential hypertension, having the same proportion with others. Others included chronic hypertension, emergency hypertension, gestational hypertension, isolated systolic hypertension, malignant hypertension. Knowledge is a major impetus in disease prevention and management but did not necessarily determine attitude and practice in this study context. This was earlier verified as it was proven no significant relationship between knowledge and attitude or knowledge and practice .

Causes of hypertension

Patients mostly perceived that hypertension was caused by excessive chronic stress.

Hypertensive status of patients

Majority of patients were hypertensive at the moment of survey. Patients mostly had another illness then they discovered as they went to the hospital that they were hypertensive. Other ways through which patients realized they had hypertension included blood pressure keeps increasing, regular blood pressure monitor, and referral. Following a study among African American, it was found that those unaware of their hypertension were only slightly less likely to have had their blood pressure checked in the past year and were nearly equally likely as those who were aware to have had it checked in the prior 2 years reported that only 70 percent of inner-city individuals with hypertension were aware of their hypertension, 55 percent were taking medication, and 26 percent were under control despite most having seen a physician within the previous 6 months. This therefore implies people are generally unaware of their hypertensive status until this is revealed to them following a contact with a physician.

Complications

Sources of complications were untreated hypertension, poorly treated hypertension and treated hypertension, being the least. The most highlighted complications were stroke, heart failure / heart attack, death, eye problems / blindness, kidney problem. Other complications were skin pigmentation, secondary hypertension, resistant hypertension, paralysis, metabolic syndrome, dementia, diabetes, aneurysm and body weakness. Patients were mostly of the opinion that hypertension can only be controlled.

Prevention of hypertension

Patients were generally of the opinion that hypertension can be prevented somehow.

The reasons why patients perceived hypertension can be prevented somehow as presented on table 61 ranged from improving self-control of anger, temper, stress, thinking, taking enough rest; adequate treatment, taking treatment or medication regularly; health monitoring, regular checkup of state of health; healthy diet, not too much salt, sugar, oil, reading label of food packaged for quality control, consuming palm oil; controlling alcohol consumption; controlling smoking; lifestyle modification, adjusting the way we live; controlling one's weight to avoid overweight; and doing enough physical exercise. These preventive measures were highlighted by other authors. The importance of prevention to curb hypertension emphasized in this study corroborates with the view of many other scholars. It was earlier argued that hypertension is one of the most crucial health problems and the most common chronic disease in developed and underdeveloped countries. It is called the silent killer which is usually diagnosed incidentally. Although hypertension is a preventable and treatable condition but without treatment it leads to serious and life threatening complications such as heart, kidney and brain disorders which in most cases result in patient's disability. Prevention plays significant role in controlling this disease which is

achieved by increasing the knowledge and awareness of the public and changing their attitude and practice .

Attitude

Patients in their majority weight had a positive attitude towards hypertension. Patients mostly take their medications as prescribed to prevent complications for the positive action, while for the negative action, they are scared of hypertension and its complications so they will check their BP regularly. However, psychological blockage leading to pessimism and non-compliance to treatment was highlighted in this study. In this perspective, tt was stressed that patient denial and non-adherence to hypertension treatment is a prevalent phenomenon reflecting a conscious choice made by the patient, based on his knowledge and perceptions regarding the medical condition and its treatment. There is a need to change perception of hypertension from a gamble to a disease process. Changing the message from the existing one of "silent killer" to one that depicts hypertension as a manageable disease process may have the potential to significantly increase adherence rates. In this study context more specifically, the major psychological problems highlighted were medication phobia / tiredness as some patients get tired taking hypertensive medications every days and psychological defection as some of the patients feel that they are already faced or come to end of life.

Unhealthy attitude by hypertensive patients could sustained or complicate their condition. It was argued that, although we know that fairly uncomplicated changes in diet and exercise habits can substantially lower blood pressures and decrease the need for antihypertensive medication, people continue to practice unhealthy life-styles? Why is it that the well-established benefits of antihypertensive drug treatment are not realized due to compliance rates in the order of 50% ? In this issue of Blood Pressure, it was proven that a hopeless attitude towards hypertension, high perceived tension with blood pressure measurement as well as frustration with treatment are all associated with poor blood pressure control. It was determined that there was a relationship between the patients' perception of nursing care and physical and social compliance .

Practices by patients

Roughly half of the patients were receiving antihypertensive medication. Roughly half of the patients knew the name of the medication they were taking. Patients were generally convinced that the medication has helped and mostly highlighted the perceived improvement in health, and blood pressure has reduced as indications of improved health.

A weak majority of patients averagely practices good recommendations for hypertensive patients. Patients mostly check their weight monthly. Patients in their weak majority always respect appointment by doctor. Similarly, in an analysis of the NHANES (National Health and Nutrition Examination Survey) III, it was found that the percentage of persons with controlled hypertension was higher for those who visited the same facility. In the same vein, It was found that severe, uncontrolled hypertension was more common among those who did not have a primary care physician .

After skipping medication, patients mostly just wait and take the next dose if it will be a few hours before the next. This was followed by those that take the dose as soon as they remember.

After experiencing side effects of a prescribed medication for hypertension, patients mostly stop and report back to the hospital.

Practice was significantly associated with category of health facility. Patients from public health facilities had significantly higher percentage of good practice as compared those from private health facilities. Practice was equally significantly associated with income with those with income below 50000 Frs having the lowest percentage of good practice. When controlled for each other, only level of education surfaced as significant predictor of practice. This is explained by the increased income with level of education as most of those with income above 100000 Frs were found among those that have attained tertiary level and also mostly attend public health facilities. In fact, it is worth noting that the two major reference hospital sampled were public and are generally expensive as corollary of the quality of care and facilities. It was earlier illustrated that patient perceptions and understanding of the need of treatment are variable, as recently shown for patients with atrial fibrillation. This diversity in patients' characteristics that reflect on their attitude toward treatment deliberately poses challenges to health personnel and this is supported by other authors who stressed that interventions to improve medication compliance and outcomes have so far been rather complex and have met with limited success (177). It was unfortunately realized that the usual manner of applying interventions in medicine is to target groups according to straightforward demographic characteristics. Similarly, physicians caring for hypertensive patients usually do not adapt their message to the individual patient, but rather follow a "mental agenda" that differs relatively little between patients. The author then set argued that what if, instead of applying blanket measures, make more targeted interventions based on patients' perceptions.

Non-compliance to treatment and more specifically non-pharmacological approach was a major issue in this study context. it was earlier opined that the adherence to the DASH diet and weight management was particularly low. Healthcare providers and policymakers should focus on improving self-care by designing simple and affordable interventions for all patients with hypertension. This study considered most of the indicators depicted in most of the comprehensive analysis .

Patient Non-adherence to Treatment of Hypertension

Patient Non-adherence to Treatment of Hypertension was equally paid sufficient attention in various studies. Patient noncompliance with prescribed antihypertensive medications is also a problem that contributes to suboptimal rates of blood pressure control. It is estimated that 50 percent of patients discontinue drug treatment after one year, and only 10 percent continue to follow advice concerning lifestyle modifications. This problem can be addressed in part by increased attention from providers in identifying barriers to medication adherence and engaging patients in treatment decisions. One study investigating how providers assess antihypertensive medication adherence revealed that patients were not asked about medication taking in 39 percent of encounters. Effective communication strategies and patient-centered counseling can be employed as a means to improve treatment adherence.

Krousel-Wood and colleagues (2005) suggest that future research should focus on the development of adherence models that consider the influence of social, psychological, and biological variables on antihypertensive medication adherence. Some established methods of improving adherence to long-term therapies include the provision of verbal and written instructions and patient education materials, simplification of regimen, once a day dosing (when possible), minimizing the number of pills, recommendation of well-tolerated therapies, and sensitivity concerning cost of pills and attempt to minimize out-of-pocket costs.

Satisfaction with care

Patients were mostly satisfied with reception by the nurse, while those that perceived that the nurse was not very busy so they could freely asked their question were fewest.

Test of research hypotheses
Research hypothesis one: Patients with low monthly income are not satisfied with care by nurses

There was no significant association between satisfaction with health care by nurses an income.

This therefore implies that nurse care does not depend on the income level of patients or is not discriminative but this is not a general practice in the world. For instance, consequences of Racial and Ethnic Disparities in Awareness, Treatment, and Control were also appraised. The demographic differences in awareness, treatment, and control of hypertension directly contribute to the nation's long-standing racial, ethnic, gender, and age disparities from cardiovascular disease (CVD) and kidney disease. It was speculated that the much smaller reduction in excess CVD mortality for blacks with controlled hypertension was probably due to several factors, including an earlier onset and greater severity of hypertension, less adequate blood pressure control, and less access to health care services. The cumulative effects of these factors probably led to more severe hypertensive target organ damage in blacks, thereby elevating CVD mortality rates even among those whose hypertension was controlled .

Research hypothesis two: Patients have no contrary views on prescribed medication issued to them by prescribers

With respect to drug prescription
Drug prescription is not standardized and depends on patients' demographic characteristics, notably income level.

With respect to prescriber
As for the prescriber, medication was said to be prescribed by a doctor by 90.8% (89). This therefore implies that statistically, patients were of the opinion that medication was not always prescribed by a doctor.

Research hypothesis three: Younger patients are not aware of preventive measures of hypertension

With respect to hypertension can be prevented somehow
A strong majority of patients perceived that hypertension can be prevented somehow and this trend cuts across age ranges.

With respect to knowledge of preventive measures
Knowledge of preventive measures was not significantly associated with age.

Challenges and prospects
Several barriers are associated with uncontrolled hypertension particularly treatment-related barriers. Findings suggest further studies to determine new effective strategies to solve this problem .

Prescription
Prescribers generally prescribed what deemed necessary for each of their patients. Few said no, blaming the costly medications and patience refusing

treatment, due being bored taking medication for a long time.

Organizational level challenges

The cost of medication was the main challenge and was followed by the inadequacy of coordination between patients and health facilities. Other challenges included the inadequacy number of staff, problem with their competence, inadequate counseling of patients and lack of standard guideline. It was suggested the need to subsidize treatment as to make it more affordable, linking patients to health facility or adequate coordination and providing adequate staff or personnel. The findings of the pre- and post-training assessments showed a marked improvement in nurses' knowledge and practice related to hypertension detection and treatment. At pre-assessment 26.9% of the nurses scored 80% or more on the hypertension knowledge test, whereas this improved significantly to 95.7% post-training. Improvement of interpersonal skills and patient education were also mentioned by the nurses as positive outcomes of participation in the intervention. In conclusion, findings suggest that if all nurses receive even brief training in the management and control of hypertension, major public health benefits are likely to be achieved in low-income countries like Ghana. Nurses in this study context asked for more training in hypertension management. Even physicians / doctors were not adequately trained.

Personnel-level challenges

Personnel level challenges ranged from work load perceive heavy, inadequate competence, inadequacy of counselors and so far counseling, inadequate motivation, challenge in knowing side effects as they are too many, and inadequate communication. They also face challenges with patients who manifest psychological effects of long or life treatment, discriminative allocation of personnel to health programs or interventions. To palliate to this problem, it was suggested the recruitment of more staff, regular in-service training, more counselors to be recruited, adequate wages or remuneration and adequate communication with patients. It was also requested that more consideration for hypertension, creating more awareness to enhance consideration for hypertension. Inadequate communication among others was given emphasis in other studies. Patient Non-adherence to Treatment of Hypertension was equally paid sufficient attention in various studies. Patient noncompliance with prescribed antihypertensive medications is also a problem that contributes to suboptimal rates of blood pressure control. It is estimated that 50 percent of patients discontinue drug treatment after one year, and only 10 percent continue to follow advice concerning lifestyle modifications. This problem can be addressed in part by increased attention from providers in identifying barriers to medication adherence and engaging patients in treatment decisions. One study investigating how providers assess antihypertensive medication adherence revealed that patients were not asked about medication taking in 39 percent of encounters. Effective communication strategies and patient-centered counseling can be employed as a means to improve treatment adherence.

Follow-up management services

Capacitating patients, care givers and community health workers was equally highlighted by the findings of this study. Previous sections have addressed a number of system factors that influence the control of hypertension. Individual factors such as motivation to take prescribed medication and healthy lifestyle choices also play a role. Community health workers (CHWs) have been studied as a strategy to help improve hypertension control. Community health workers are broadly defined as "community members who work almost exclusively in community settings and who serve as connectors between healthcare consumers and providers to promote health among groups that have traditionally lacked access to care". They serve as lay educators, coaches, navigators, advocates, and liaisons to the health care system .

Hypertensive patients' subjective health outcome self-reported health status and objective health outcome blood pressure (BP) control were found to be significantly associated with follow-up management services. The outcomes were both significantly improved by a high frequency of management services, a high level of follow-up providers, the mode of visiting healthcare facilities and/or calling, and receiving instructions on medication use .

Follow up services in this study context was not existing or was hindered by number of factors, accessibility due to poor road network, poor mobile network coverage in some localities, some patients not disclosing their contacts, lack of airtime on the part of the healthcare providers.

Patient Self-Management

In addition, BP measurement was significantly and positively associated with hypertensive patients' self-reported health status; the patients receiving lifestyle guidance were more likely to have their BP levels under control. It was concluded that hypertension management strategies should further focus on the frequency of healthcare follow-up management via categorization of the follow-up services and appropriate adjustment of service delivery modes to

optimize health follow-up management for hypertensive patients further improve their outcomes. Meanwhile, complementary policies are also needed to address other socioeconomic factors that can promote good health conditions for hypertension patients. Patient awareness of BP and targets, appropriateness of BP targets and adherence to anti-hypertensive medications were assessed as indicative self-management outcomes. Meanwhile, patients in this study context were perceived not sufficiently equipped with BP machines and also, many of them including their care givers lack knowledge on the management of hypertension.

Patient-level challenges

Challenges faced by patients ranged from non-compliance or not following prescribed treatment, financial constraints on the part of the patients as they cannot meet up with hospital bills or pay for medications, many medications, inadequacy of care givers, co-morbidity as other illnesses add to hypertension, lack of objectivity in reporting health history, and psychological problems or trauma deriving from long term medication and chronic nature of the disease. Inadequate BP self-monitoring as some patients don't monitor their BP from time to time, inadequate home treatment, non-respect of feeding protocol and challenging handling old / aged patients and stroke patients were also mentioned, patients' reluctant to change their life style, denial syndromes, refusing to accept the condition and challenging management of patients with multiple problems.

Suggestions to addressed these challenges ranged from the need to subsidize treatment, adequate education and counseling, education on non-pharmacological management, helping patients acquire their own BP machine, education or counseling of patients, proper follow up of patients by making many rendezvous, prescribing a drug with many molecules, formalizing home care, and making available food supplements. It was described some of the most promising recent advances in nonpharmacologic (e.g., diet, physical activity) as well as pharmacologic approaches to treating hypertension in African Americans. First, they noted the acceptability and the effectiveness of the DASH (Dietary Approaches to Stop Hypertension) diet (low-fat dairy food, fruit or vegetables, and foods low in total and saturated fat) among African Americans who enrolled in the DASH clinical trial. Bray and colleagues, in an analysis of the effects of the DASH diet and three dietary sodium levels on blood pressure, also reported that the lower the sodium level, the greater the mean reduction in blood

pressure. The effect was even more pronounced and beneficial for African Americans.

Also, medication phobia highlighted in this study is not peculiar to the context. A recent study shows that most hypertensive patients have general reservations about using drugs, and that patients' ideas about treatment may derive from considerations unrelated to the drugs' pharmacology. We may thus need to shift our focus from what we traditionally speak about to the "softer" aspects of therapy. One source of knowledge about what hypertensive patients find it worthwhile to speak about is the Database of Individual Patient Experiences (DIPEx) , which is available on the Internet (www.dipex.org). New drugs, large mega-trials and learned lecturers may pontificate on how we should treat our hypertension patients, as well as (for example) the OPTIMAAL meaning of LIFE (!). By taking into account the perceptions of patients, we may be able to avoid upsetting the ancient Greeks with our feeble advances, should they come back to assess us!

Equipment and facility-based challenges

As for the challenges related to facilities, they complained mostly of the inadequacy of equipment with emphasis on BP machines, equipment were also perceived to be costly and scarce. They then wished that those equipment should be provided.

Medication-based challenges

The challenges related to medication ranged from medication perceived expensive, side effects of drugs or treatment, unviability of some class of anti-hypertensive, challenges with multiple combinations of drugs, and non-response to treatment. Suggestions to these problems were counseling on the importance of the treatment, subsidizing medications, insurance, adequate dosage, education on non-pharmacological management, and education on side effects.

Challenges with multiple combinations are not peculiar to this study context. Krousel-Wood and colleagues (2005) suggest that future research should focus on the development of adherence models that consider the influence of social, psychological, and biological variables on antihypertensive medication adherence. Some established methods of improving adherence to long-term therapies include the provision of verbal and written instructions and patient education materials, simplification of regimen, once a day dosing (when possible), minimizing the number of pills, recommendation of well-tolerated therapies, and sensitivity concerning cost of pills and attempt to minimize out-of-pocket costs.

The cost of medication as major hindering factor to compliance to treatment was highlighted in other

settings. One reason for patient non-adherence with treatment is out-of-pocket costs for medication. Controlling for health status, financial burden (out-of-pocket costs compared to income) has been shown to be significantly greater for persons with chronic conditions such as hypertension. Many studies, using a variety of methodologies, have documented a relationship between cost to patients, poorer adherence to treatment, and poorer control of hypertension. Several studies have utilized survey data to assess the relationship between cost and adherence to treatment. Generally these studies have reported that cost is a significant problem particularly for ethnic minorities, those with lower incomes, and those with higher out-of-pocket costs .

Insurance coverage still very poor in this study context and it was suggested a way to palliate to non-compliance to treatment due to high cost of medication. It was earlier opined that one way of reducing patient costs of treatment is through insurance coverage. Many studies have examined the impact of insurance coverage on hypertension. Many of the data come from observational studies. Data from national surveys (1982 NHIS, 1987 MEPS) support the association of insurance coverage with hypertension screening, follow-up care, and use of medication. For example, inadequate screening for hypertension was 18 percent among the uninsured vs. 11 percent for the insured.

Conclusion

Hypertension was mostly perceived to be controlled not treated with major emphasis placed on prevention. The controlled target as stated by nurses was to lower BP to the acceptable level. Nurses had positive attitude towards hypertension which was reflected on the highly satisfaction expressed by patients.

Both nurses and physicians recommended the complementarity between pharmacological and non-pharmacological approaches of treatment, with particular attention paid to prevention.

It was generally perceived that prescription was by the doctor or physician though few acknowledged prescription by nurses, which might not necessarily be counter-standard, given the fact that WHO suggests that pharmacological treatment of hypertension can be provided by non-physician professionals such as pharmacists and nurses, as long as the following conditions are met: proper training, prescribing authority, specific management protocols and physician oversight. In this study context, nurses argued that prescription is priori to authorization and that they could do it if authorized by the doctor.

Care-givers were perceived essential in the management of hypertension, notably home follow-

up but their performance was hindered by the inadequacy of their knowledge and awareness, coupled with the discretion nature of some patients reluctant to disclose their contact.

Home or community-based follow up was hindered by the fact that it was not formerly integrated by health facilities.

Compliance to treatment as well as treatment outcome were hindered by several factors, notably the diversity of treatment guidelines, the high cost of treatment, the inadequate availability of drugs, the ineffectiveness of drugs, resistance to drugs, inadequacy of staff and motivation, inadequate competent staff, poverty of patients, inadequacy of equipment notably BP machines that equally hinder self-monitoring by patients, non-compliance to treatment by patients, challenging home follow-up, enslavement of some areas, poor mobile network coverage in some areas, socio-political crisis, and psychological problems such as medication phobia and defection / pessimism.

Numbers of barriers peculiar to the study context were identified, thus supporting the need to contextualize an approach for the management of hypertension.

Facilitators to the management of hypertension ranged from the consideration of hypertension in health facilities, the intrinsic motivation of health personnel, and patient consideration of the importance of preventive measures.

Recommendation

Based on the findings of this study, the following were recommended:

Increasing staff in health facilities

Improving on the motivation of staff

Training staff on the management of hypertension

Optimal consideration for hypertension in health facilities

Provision of equipment notably BP machine

Enhancing the awareness and knowledge of patients and care givers about hypertension to foster compliance to treatment, home management and follow up.

Enhancing the availability and quality of drugs

Making drugs available at frontline health facilities to facilitate their accessibility given the enclave nature of some areas

Subsidizing treatment and drugs and if possible enhancing insurance scheme.

Capacitating community health workers to support follow-up at community level

Enhancing the combination of pharmacological and non-pharmacological approach of treatment

Improving road network, mobile network coverage and ending the socio-political crisis to optimize health care coverage

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