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# Challenges in the Care and Follow-Up of Hypertensive Patients in Fako Division, Southwest Region of Cameroon

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## Abstract

The purpose of the study is to appraise challenges surrounding the care and follow-up of hypertensive patients in Fako Division in the Southwest Region of Cameroon, and recommend a more comprehensive and adaptable approach. Concerning the theoretical scope, the study was guided by the Health Belief Model (HBM) as applied by Tarkang and Zotor (2015), the Theory of Human Caring and the Theory of Health Promotion Model (Devi et al., 2017). It was a hospital-based study that employed a cross-sectional qualitative survey design. All hypertensive patients and their caregivers visiting the hospital during the study period, as well as nurses and prescribers in the study setting, were involved conveniently. Two health facilities were randomly selected, one public and one non-public, from among all the health units in the 4 main subdivisions of Fako, making a total of 8 health facilities of primary, secondary and tertiary levels. Data were collected using an interview guide directed to patients, caregivers, nurses, and prescribers. The abstraction of the data was reduced following the thematic analysis process. The findings unfolded that both nurses and physicians/prescribers recommended the complementarity between pharmacological and non-pharmacological approaches to treatment, with particular attention paid to prevention. Nurses had positive attitudes towards the management of hypertension, and patients were mostly satisfied with treatment. However, a number of barriers were identified and urged to be resolved. Compliance with treatment, as well as treatment outcomes, were hindered by several factors, notably the diversity of treatment guidelines, the high cost of treatment, the inadequate availability of drugs, the ineffectiveness of some drugs, resistance to drugs, inadequacy of staff and motivation, inadequate competency of staff, poverty of patients, inadequacy of equipment notably BP machines that equally hinder self-monitoring by patients, non-compliance to treatment by pa-

tients, 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, Challenges, Model

## 1. Introduction

Hypertension is a complex, chronic and non-communicable disease condition that is usually referred to as the silent killer (Sawicka et al., 2011). 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 (Kotchen, 2011). 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, and 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 (McAlister et al., 2011). Medical management of chronic illness consumes about 75% of every healthcare dollar spent in the United States, and the provision of economical, accessible, and high-quality chronic disease care is a continuing concern across healthcare 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 has been postulated that, by the end of 2025, the prevalence of hypertension will likely increase by 60% to a total of 1.56 billion worldwide, suggesting that HTN remains a major and crucial public health problem (Sawicka et al., 2011). Hypertension in Sub-Saharan Africa (SSA) has also been on the rise, with reports indicating higher values in urban settings than in rural settings (Ogah & Rayner, 2013). The prevalence of hypertension in SSA ranges between 14.5% in rural Eritrea, 32.9% in semi-urban Ghana 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 (Kotchen, 2011). In Cameroon, the overall hypertension prevalence was 30.9%, with little discrepancy across regions (Ghosh et al., 2021). It is quite evident that hypertension poses multiple-level challenges worldwide.

## 2. Background

The English clergyman Stephen Hales made the first published measurement of

blood pressure in 1708 (Newman, 2005). 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 (Sawicka et al., 2011). 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 (McAlister et al., 2011). 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 and kidney damage in Bright's disease (Ogah & Rayner, 2013). Samuel Wilks, however, observed something new: 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 raised blood pressure in a person with no history of kidney disease was isolated by FA Mahomed in 1874 using a sphygmograph (O'Rourke & Nicholas, 2005). The concept of hypertension as a generalized circulatory disease was taken up by Sir Clifford Allbutt, who termed the condition "hyperpiesia" (Lin et al., 2019). Hypertension as a medical disease came into being in 1896 with the invention of the cuff-based sphygmomanometer by Scipione Riva-Rocci (Qureshi et al., 2006), 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 (Sawicka et al., 2011). Tracking serial blood pressure measurements was further enhanced when, in the early 1980s, Donal Nunn invented an accurate, fully automated oscillometric sphygmomanometer device (Lin et al., 2019). 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 (O'Rourke & Nichols, 2005). It is interesting to note that Franklin D. Roosevelt had severe hypertension (Qureshi et al., 2006). 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 were 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" (Sarafidis et al., 2008) further stated that "people with 'mild benign' hypertension (defined as

blood pressures up to levels of 210/100 mm Hg) need not be treated". However, as the tide of medical opinions was turning, it was increasingly recognized in the 1950s that "benign" hypertension was not harmful (Herring et al., 2019). 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 (Schutte et al., 2023). 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, non-invasive 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 (O'Rourke & Nicholas, 2005). Casual blood pressure, on the other hand, consisted of the relatively stable basal blood pressure and a variable supplemental blood pressure (O'Rourke & Nicholas, 2005). 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 (Lin et al., 2019). 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 pressure. 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. 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 (Ghosh et al., 2021). As the technique for measuring blood pressure improved, increasing evidence for a blood pressure-mortality relationship became apparent, and many more companies began to require blood pressure measurements of insurance applicants. By 1918, companies were meas-

uring systolic and diastolic blood pressures by auscultation, under somewhat standardized conditions, rather than simply systolic blood pressures by palpation (Ghosh et al., 2021). Historically, the treatment for hard pulse disease consisted of reducing the quantity of blood by the use of leeches (Ghosh et al., 2021). Between the late 19th and mid-20th centuries, varied therapies were used to treat hypertension, but few were effective and were many times poorly tolerated by the patients (Qureshi et al., 2006). Therapies used in that era included strict sodium restriction sympathectomy (surgical ablation of parts of the sympathetic nervous system (Sarafidis et al., 2008), and pyrogenic therapy (injection of substances that causes sepsis with hyperpyrexia that, according to them, will indirectly reduce blood pressure) (Qureshi et al., 2006; Sarafidis et al., 2008). The first chemical for hypertension, sodium thiocyanate, was used in 1900 but had many side effects and was unpopular (Sawicka et al., 2011). Other treatments, such as barbiturates, bismuth, and bromides, were mainly adjunct treatments rather than therapeutic. After World War II, a popular and reasonably effective drug, tetramethylammonium chloride and its derivative hexamethonium were in use (Herring et al., 2019). Later, still after the Second World War, hydralazine and reserpine were in use. According to (Schutte et al., 2023) 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 and the Lasker Special Public Health Award (created by Albert and Mary Lasker in 1945) that encouraged biological and clinical advances that improved human health was awarded to the team that developed chlorothiazide (Lasker Foundation, 2025). 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 (Giles et al., 2005). Soon, more drugs became available to treat hypertension. The British physician James W. Black developed beta-blockers in the early 1960s (Kotchen, 2011). 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 (Giles et al., 2005). 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, clinical trials of captopril started captopril, which led to the development of a number of other ACE inhibitors. In 1981, captopril was approved by the US FDA for the treatment of hypertension and heart failure. More recently, angiotensin receptor blockers and renin inhibitors have also been introduced as antihypertensive agents (WHO, 2024).

## 3. Problem Statement

Hypertension is a global health problem associated with an increased risk of de-

veloping cardiovascular diseases (Sawicka et al., 2011). The high prevalence of hypertension and its inadequate 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 is the leading preventable predisposing factor for cardiovascular disease (CVD), and hypertension ranks first as a cause of disability-adjusted life years worldwide (Sawicka et al., 2011; Kotchen, 2011). Suboptimal BP control and noncompliance to treatment protocols are the most common attributable risk factors for Cardiovascular and cerebrovascular diseases, including haemorrhagic stroke (58%) and ischemic stroke (50%), ischemic heart disease (55%), and other forms of CVD (58%), including heart failure and peripheral arterial disease (Klatsky, 2015). 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 (CSVD). 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 ischemic attack), ischemic heart disease, heart failure, and non-cardiac vascular disease (Mayberry et al., 2008). The prevalence of hypertension globally is high and continues to increase (Sawicka et al., 2011; Davis, 2024). Defined as a cut-off of >140/90 mm Hg, the worldwide prevalence of hypertension is about 31%, translating to approximately 1.4 billion adults (Darabont, 2022). According to progressive studies, the prevalence of hypertension in the adult US population is similar to the worldwide prevalence at 31.9% (72.2 million people) using the >140/90 mm Hg BP cutoff (Ghosh et al., 2021). 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 adherent to antihypertensive regimens (Davis, 2024). It has also been noted by the principal investigator that there are many cases of hypertensive crisis around the 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. There is a need to further understand challenges surrounding the care for hypertensive patients and provide adequate resort measures. Of course, if more friendly strategies are not put in place, then morbidity and mortality rates will keep rising, and consequently, the health burden on individuals, families, the state, and the world at large will continue to rise. The situation potentially could be more critical in such a crisis-torn environment.

## 4. Aim

The study aimed at appraising challenges surrounding the care and follow-up of

hypertensive patients in the Fako Division in the Southwest Region of Cameroon and recommending a more comprehensive and adaptable approach.

## 5. Rationale

Cameroon's hypertension prevalence is high and increasing. Emerging patterns call urgently for effective campaigns to raise hypertension awareness alongside strategies for hypertension prevention and a more friendly, adaptable approach to care, treatment and follow-up. African countries, including Cameroon, have no guidelines for the management of hypertension (Darabont, 2022). This study will help inform health policymakers about improving the care of hypertensive patients, with particular emphasis on preventive methods and strategies.

## 6. Significance of the Study

Although strides have been made over the past few years, there is still a need to improve follow-up care. The study is significant because of the high prevalence of hypertension, increased risk of cardiovascular diseases and its numerous sequelae due to the complexity of risk factors as well as more challenges in mitigating some risk factors. Promoting a friendly, adaptable approach to follow-up patients, trying to understand reasons for the increasing non-compliance attitude, enhancing compliance and intensifying public awareness on prevalence, risk factors and causes and enhancing patients and family ability to take charge of their health and be more responsible are important.

The study was guided by the conceptual framework presented in **Figure 1**.

## 7. Materials and Methods

### 7.1. Research Design

It was a hospital-based cross-sectional study that employed a qualitative survey design. Data were collected using interview guides, which is a typical survey instrument. A survey essentially collects people's opinions or viewpoints on a given issue (Nana, 2018). The study is cross-sectional because it makes just an appraisal or snapshot of the current situation. As regards temporal delimitation or time-period scope, the work was a cross-sectional study that started in November 2023 and ended in October 2024.

### 7.2. Area of Study

The study was carried out in Cameroon, in the 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 534,854 inhabitants, with an average yearly temperature of 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 staff 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, Tiko, Mutengene and Buea Health Districts Health Districts. The four health districts solicited for our study gain their grounds on their accessibility and their heavily populated state thanks to their relative calmness patterning the socio-political crisis in Northwest and Southwest regions (CVUC, 2019).

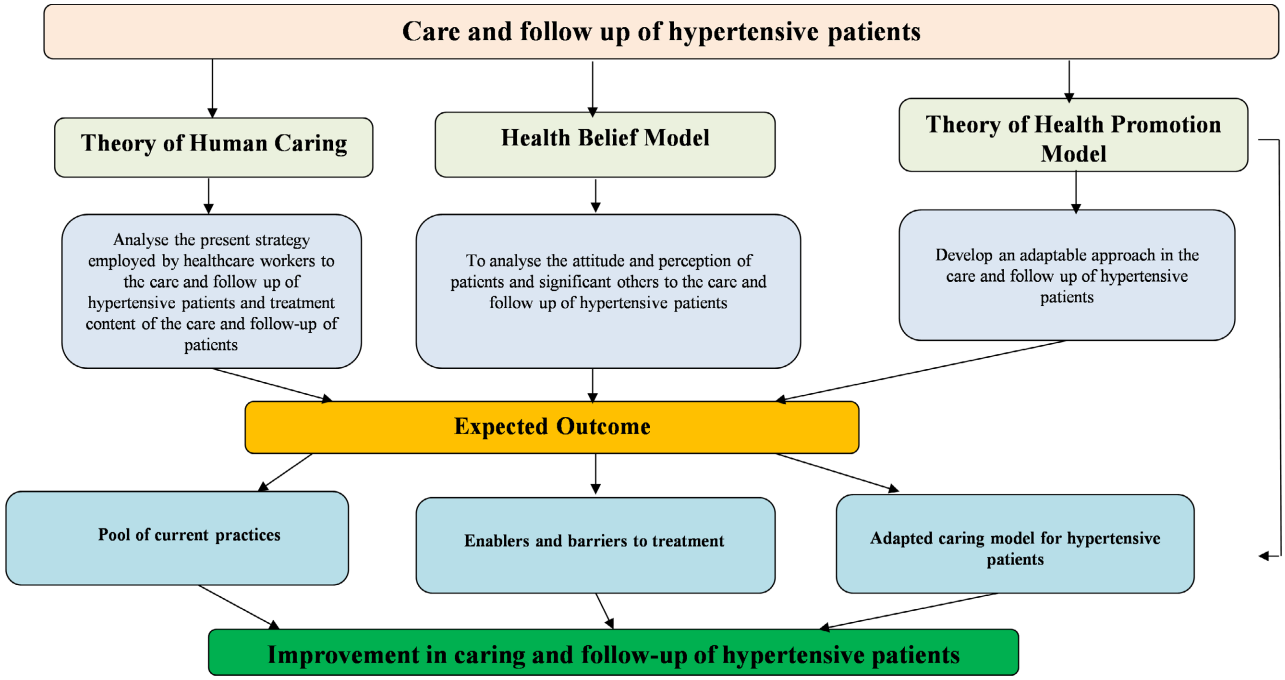


**Figure 1.** Conceptual framework depicting schematic care and follow-up.

## 7.3. Study Setting

This hospital-based study was conducted in 8 health facilities in Limbe, Tiko, Mutengene and Buea Health Districts (Table 1).

**Table 1.** Sampled health facilities.

| Sub-division | Health facilities |
|---|---|
| Tiko | Cottage Hospital Tiko |
| | District Hospital Tiko |
| | Central Clinic Tiko |
| Buea | Buea Regional Hospital |
| | Mount Mary |
| Limbe | Presbyterian Health Center Limbe |
| | Regional Hospital Limbe |
| Mutengene | Centre Medical d'Arrondissement (CMA) Mutengene |
| | Regina Pacis Mutengene |

### 7.4. Population of the Study

It was made up of all hypertensive patients (outpatients and inpatients) visiting the sampled hospitals during the study period, as well as their caregivers, nurses, and prescribers. This also makes up the targeted and accessible population. Their number is undetermined.

### 7.5. Sampling Methods and Sample Size

#### 7.5.1. Health Facilities

Two health facilities were selected in each of the four health districts using a simple random sampling approach, one public and one non-public health facility among all the health facilities in the 4 main subdivisions of Fako, making a total of 8 health facilities of primary, secondary and tertiary levels. Cottage Hospital Tiko and District Hospital Tiko share the same headquarter and should be considered as the same health facility, thus jointly counted as one health facility (**Table 1**).

#### 7.5.2. Participants

All caregivers visiting the hospital during the study period were involved in the study. Nurses and prescribers were also part of the study. A convenient sampling technique was used, considering stratification for the type of hospital and level of health facility, and participants were involved in the study as they consented.

### 7.6. Instruments for Data Collection

Data were collected using interview guides. They generally captured demographic information by considering age, sex, level of training, years of experience, previous training, health facility and category of health facility, perception about care, and prospects (problems and suggestions for improvement).

#### Validity of the Instrument

A major concern in research is the validity of the procedures and conclusions. 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 the 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 (Mugenda & Mugenda, 2003). Guba's model for trustworthiness addresses ways for warding off biases in the results of qualitative analysis (Mohlokoane, 2004). 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 identified consider credibility, transferability, comparability, dependability and conformability (UNISA, 2003). The pilot study was conducted in a health facility in Buea municipality, which was later excluded from the sampling process. 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 a similarity between the reality that exists in the world and the research results. The reliability

of social research mostly relies on the extent to which respondents are trustworthy because it is often assumed at this level that thorough content, construct and face validity are done. Given that we are dealing with essentially qualitative data, the panel of judge method of reliability was employed. The method is a palliative to most test-retest methods problems. Rather than submitting people to the same questionnaire on two different occasions, this method allows two or more judges to appraise the data collection instrument, the indicators or the codes and then check for the level of agreement (Mohlokoane, 2004). This method, although safe from some disadvantages of the test-retest method, depends highly on the level of conceptual reasoning, the background and the sense of logical and systematic reasoning of the judges. Generally, the judges should have a suitable background meeting the inclusive criteria of the study. The approach of analysis of the panel of judge method is similar to that of the parallel method in qualitative studies. The parallel method generally applies when dealing with quantitative studies. However, this method or panel-of-judge method can be used in qualitative research, as it is the case in this study, whereby reliability was appraised not mathematically but conceptually, which is termed the conceptual parallel method (Nana, 2018). The responses of the judges were appraised to make sure that they had the same interpretation or understanding of the questions; this was an indication that the questions were well-framed and understandable. This approach is similar to content validity, but the difference lies in the fact that the respondents here shall meet the profile of the study participants, and another difference lies in the fact that the responses are appreciated not by the respondents but by a third party judge, generally the student, the statistician or the supervisors. In this perspective, for each interview guide, coupled with the content and construct validity from the supervisors, two respondents meeting the inclusion criteria of the study were given the interview guide for responses. Generally, comprehension and vocabulary challenges were raised, and they were sorted out, adjusted and verified for cross-validations.

### 7.7. Data Collection Process

Data were collected using the face-to-face approach while abiding by the necessary ethical considerations over a period of two months.

### 7.8. Data Management and Analysis

Interviews were transcribed verbatim and revised by the promoters 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, GMBH 5.0, 2021) for thematic analysis. 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 codes/concepts/umbrella terms and their

descriptions can be subjected to relative bias, quotations are grounded and real, thus helping compensate for potential bias (Nana, 2018). Though positivism was applied, the dominant theoretical perspective was qualitative. A conceptual diagram concludes the analytical stage, which consists of relating concepts or ideas in a meaningful and logical manner, which is termed concept-building in qualitative analysis (Nana, 2018).

## 8. Findings

### 8.1. Socio-Demographic Information

The three categories of participants, notably prescribers, nurses and caregivers, were diversified in their characteristics, and this added to this stratification of the sample to enrich the diversification of ideas, with as major added value the reliability and representativeness of the findings.

#### 8.1.1. Prescribers

Table 2 presents the demographic characteristics of prescribers.

Table 2. Demographic characteristics of prescribers.

| **Age** | **n** | **%** |
|---|---|---|
| 18 - 30 | 3 | 8.8 |
| 31 - 40 | 18 | 52.9 |
| 41 - 50 | 13 | 38.2 |
| **Sex** | **n** | **%** |
| Male | 25 | 73.5 |
| Female | 9 | 26.5 |
| **Level of training** | | |
| Master's degree in nursing | 1 | 2.9 |
| Medical doctor | 33 | 97.1 |
| **Years of experience** | | |
| 1 - 5 | 3 | 8.8 |
| 6 - 10 | 11 | 32.4 |
| 10 - 15 | 15 | 44.1 |
| 16 - 20 | 5 | 14.7 |
| **Previous training: Have ever received training on the care and follow-up of hypertensive patients post-graduation, either seminar or workshop** | **n** | **%** |
| Yes | 26 | 76.5 |
| No | 8 | 23.5 |
| **Health facility** | **n** | **%** |
| CMA Mutengene | 1 | 2.9 |
| Presbytherian Health Center Limbe | 1 | 2.9 |

**Continued**

| | | |
|---|---|---|
| Regional Hospital Limbe | 13 | 38.2 |
| Cottage Hospital Tiko | 4 | 11.8 |
| Buea Regional Hospital | 8 | 23.5 |
| Regina Pacis | 3 | 8.8 |
| District Hospital Tiko | 3 | 8.8 |
| Mount Mary Hospital | 1 | 2.9 |
| **Category of health facility** | **n** | **%** |
| Public | 24 | 70.6 |
| Private | 10 | 29.4 |

N = 34.

Age

The mode age of prescribers was 31 - 40 years with a proportion of 52.9% (18), followed by those aged 41 - 50 years 38.2% (13), while 8.8% (3) of them were aged 18-30 years.

Sex

Males were dominant, with a proportion of 73.5% (25), against 26.5% (9) for females.

Level of training

Prescribers were generally medical doctors, with only one of them having a Master's degree in nursing.

Years of experience

Prescribers were generally experienced with the mode at 10 - 15 years 44.1% (15), followed by 6 - 10 years 32.4% (11), 16 - 20 years 14.7% (5), then 1 - 5 years 8.8% (3).

Previous training: Have ever received training on the care and follow-up of hypertensive patients post-graduation, either seminar or workshop

A strong majority of them had received training on the care and follow-up of hypertensive patients post-graduation, either in seminars or workshops, of 76.5% (26).

Health facility

They were sampled from 8 different health facilities, among which 70.6% (24) of the prescribers were from the public sector and 29.4% (10) from the private sector.

### 8.1.2. Nurses

Table 3 presents the demographic characteristics of nurses.

Table 3. Demographic characteristics of nurses.

| Grade of Nurses | n | % |
|---|---|---|
| Nursing Aid (NA) | 12 | 7.1 |

**Continued**

| | | |
|---|---|---|
| Assistant Nurse/Brevete Nurse | 28 | 16.5 |
| State Registered Nurse (SRN) | 75 | 44.1 |
| Higher National Diploma (HND) | 32 | 18.8 |
| Bachelor's Degree in Nursing Science (BNS) | 21 | 12.4 |
| Above BNS | 2 | 1.2 |
| **Longevity in clinical practice** | **n** | **%** |
| Below 1 year | 15 | 8.8 |
| ≥1 to 5 years | 101 | 59.4 |
| >5 to 10 years | 33 | 19.4 |
| >10 to 15 years | 12 | 7.1 |
| >15 to 20 years | 4 | 2.4 |
| >20 to 25 years | 5 | 2.9 |
| **Have had any post-graduation training, workshop or seminar on the management and follow-up of hypertension** | **n** | **%** |
| Yes | 4 | 2.4 |
| No | 166 | 97.6 |
| **Health facility** | **n** | **%** |
| CMA Mutengene | 14 | 8.2 |
| Presbyterian Health Center Limbe | 13 | 7.6 |
| Regional Hospital Limbe | 27 | 15.9 |
| Cottage Hospital Tiko | 10 | 5.9 |
| Buea Regional Hospital | 47 | 27.6 |
| Regina Pacis | 14 | 8.2 |
| District Hospital Tiko | 15 | 8.8 |
| Mount Mary | 14 | 8.2 |
| Central clinic Tiko | 16 | 9.4 |
| **Category of health facility** | **n** | **%** |
| Public | 102 | 60.0 |
| Private | 68 | 40.0 |

Grade of nurses

The mode here was State Registered Nurse 44.1% (75), while the least represented were those with a level above Bachelor's Degree in Nursing (BNS) 1.2% (2).

Longevity in clinical practice

The mode here was ≥1 to 5 years with a proportion of 59.4% (101), while the least represented fell in the range >15 to 20 years with a proportion of 2.4% (4).

Have had any post-graduation training, workshop or seminar on the management of and follow-up of hypertension

Nurses generally had never received any post-graduation training, workshop or

seminar on the management and follow-up of hypertensive patients 97.6% (166).

Health facility

Nine health facilities were sampled namely Buea Regional Hospital 27.6% (47), been the mode, followed by Regional Hospital Limbe 15.9% (27), Central Clinic Tiko 9.4% (16), District Hospital Tiko 8.8% (15), CMA Mutengene and Regina Pacis 8.2% (14), then Presbyterian Health Center Limbe 7.6% (13).

Category of health facility

As for the category of health facility, 60.0% (102) of them were from public health facilities, while 40.0% (68) were from the private sector.

### 8.1.3. Patients

Table 4 presents the demographic characteristics of patients.

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 | 0.7 |
| Above 80 | 2 | 1.3 |
| **Spirituality/Religion** | **n** | **%** |
| Christian | 141 | 94.0 |
| Peganism | 3 | 2.0 |
| Islam | 1 | 0.7 |

Continued

| | | |
|---|---|---|
| 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 |

Sex

Females were more than males in the sample, with a proportion of 63.3% (95) against 36.7% (55) for males.

Marital status

The majority of patients were married 64.0% (96), followed by the single 21.3% (32), the widowed/widower 6.7% (10), and 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, which is almost half, thus implying that hypertension is not necessarily an old-age disease.

Spirituality/Religion

Hypertensive patients were generally Christians 94.0% (141). Only one was Muslim, 2.0% (2) Pagans, while 3.3% (5) practiced other religions, thus indicating that traditionalists were the least prone to hypertension.

Level of education

The mode here was no formal education or never been to school, with a 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

A weak majority of them were involved in a sedentary type of activity, 58.7% (88).

Range of monthly income

The majority of them earned below 50,000 frs 56.7% (85), which is quite low, thus indicating a dominant state of poverty.

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. This, coupled with their low income, put further stress on their ability to finance healthcare when the need arises.

Health facility

Patients were sampled in 9 health facilities namely Buea Regional Hospital 17.3% (26), Mount Mary 15.3% (23), Presbyterian 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.

### 8.1.4. Caregivers

Table 5 presents the demographic characteristics of caregivers.

Table 5. Demographic characteristics of caregivers.

| Level of education | n | % |
|---|---|---|
| No formal education | 13 | 16.9 |
| FSLC | 6 | 7.8 |

**Continued**

| | | |
|---|---|---|
| Secondary education | 15 | 19.5 |
| High school | 32 | 41.6 |
| University | 11 | 14.3 |
| **Sex** | **n** | **%** |
| Male | 23 | 29.9 |
| Female | 54 | 70.1 |
| **Age** | **n** | **%** |
| Less than 21 | 31 | 40.3 |
| Above 21 years to 25 years | 12 | 15.6 |
| Above 25 to 30 years | 8 | 10.4 |
| Above 30 to 35 years | 7 | 9.1 |
| Above 35 to 40 years | 4 | 5.2 |
| Above 40 to 45 years | 12 | 15.6 |
| Above 45 to 50 years | 2 | 2.6 |
| Above 50 years | 1 | 1.3 |
| **Religion/Spirituality** | **n** | **%** |
| Christian | 45 | 58.4 |
| Others | 32 | 41.6 |
| **Health facility** | n | % |
| Buea Regional Hospital | 23 | 29.9 |
| Regional Hospital Limbe | 15 | 19.5 |
| Mount Mary | 12 | 15.6 |
| Regina Pacis | 10 | 13 |
| CMA Mutengene | 9 | 11.7 |
| District Hospital Tiko | 7 | 9.1 |
| Cottage Hospital Tiko | 1 | 1.3 |
| **Category of health facility** | **n** | **%** |
| Public | 46 | 59.7 |
| female | 31 | 40.3 |
| **Relationship with patients** | **n** | **%** |
| Sister | 13 | 16.9 |
| Father | 9 | 11.7 |
| Grandparent | 8 | 10.4 |
| Mother | 8 | 10.4 |
| Brother | 7 | 9.1 |
| Husband | 6 | 7.8 |
| Wife | 5 | 6.5 |

**Continued**

| | | |
|---|---|---|
| Uncle | 5 | 6.5 |
| Cousin | 3 | 3.9 |
| Neighbour | 2 | 2.6 |
| Aunt | 2 | 2.6 |
| Stepfather | 2 | 2.6 |
| Distant relative | 1 | 1.3 |
| Friend | 1 | 1.3 |
| Good Samaritan | 1 | 1.3 |
| Fiancée | 1 | 1.3 |
| Stepmother | 1 | 1.3 |
| Son/Daughter | 1 | 1.3 |
| Father-in-law | 1 | 1.3 |

Level of education

The mode here was high school with a proportion of 41.6% (32), followed by those that have attained secondary education 19.5% (15), those that have never been to school 16.9% (13), those that have attained University 14.3% (11), with the least represented been those with First School Leaving Certificate (FSLC) 7.8% (6). Cumulatively, the majority (55.8%) of them have attained high school or higher, thus implying that caregivers were relatively educated.

Sex

Caregivers were dominantly female, with a proportion of 70.1% (54), as compared to 29.9% (23) for the male.

Age

The mode age here was less than 21 years 40.3% (31), and the least represented age range was made of those aged above 50 years 1.3% (1). Cumulatively, 75.3% were aged 35 years or less, which implies that caregivers were relatively young.

Religion/Spirituality

The majority of caregivers were Christian 58.4% (45), while the rest indicated other unspecified religions/spiritualities.

Health facility

Caregivers were sampled in all the health facilities, namely Buea Regional Hospital 29.9% (23), Regional Hospital Limbe 19.5% (15), Mount Mary 15.6% (12), Regina Pacis 13.0% (10), CMA Mutengene 11.7% (9), District Hospital Tiko 9.1% (7), then Cottage Hospital Tiko 1.3% (1).

Relationship with the hypertensive patient

As for the relationship with the patient, the top five were sister 16.9% (13), father 11.7% (9), grandfather 10.4% (8), having the same proportion as mother, brother 9.1% (70, then husband 7.8% (6). Others were wife, uncle, cousin, neighbour, aunt, stepfather, distant relative, friend, good Samaritan, fiancée, stepmother, son/daugh-

ter and father-in-law.

### 8.2. Adaptable Approach to Inform Policy in Care and Follow-Up of Hypertensive Patients

This adaptable approach (Figure 2) is contextualized based on the empirical data of the study, considering barriers and facilitators, and then response measures.

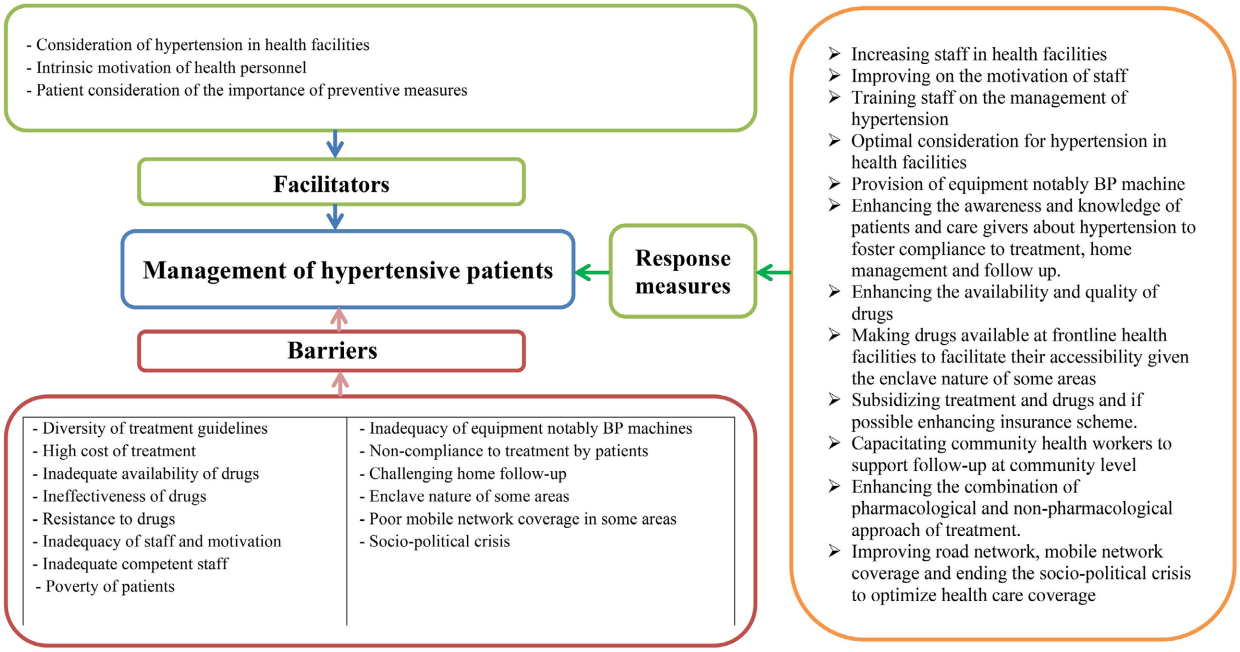


**Figure 2.** Conceptual diagram depicting an adaptable approach to be used in care and follow-up of hypertensive patients.

The specificities of other models for the care of hypertension patients were their contextualization nature and the fact that they focus on barriers and facilitators.

A framework highlighted by the literature was particularly patient-centred, given the diversification of hypertensive patients in their health profile, and socio-cultural and economic characteristics (Dhungana et al., 2021; Mogueo & Defo, 2022).

The conceptual diagram below is summarized from the code-grounding-quotation tables that were generated following the thematic analysis.

## 9. Discussion

The purpose of the study is to appraise challenges surrounding the care and follow-up of hypertensive patients in the Fako Division in the Southwest Region of Cameroon, and recommend a more comprehensive and adaptable approach. Several barriers are associated with hypertension, particularly treatment-related barriers, and findings suggested further studies to determine new effective strategies to solve the problems (Fakhri et al., 2011); this could be reflected in this study context whereby only 53.2% (41) of caregivers were satisfied with care to give to their patients. Challenges highlighted by nurses ranged from: Patients not complying to treatment, rendezvous, drugs consumption; patients are poor and can-

not afford their treatment; challenge in implement non-pharmacological type of treatment; inadequacy or lack of equipment and BP machines; inadequacy or lack of cardiologists and cardiac centre; inadequate supply of drugs, lack of drugs; disease not responding to current treatment, resistance issues; inadequate nurse/patient relationship or inadequate collaboration between nurse and patient; language barrier hindering communication with patient; inadequate staff leading to heavy workload; diversity of guidelines/protocol leading to confusion; inadequate mobile network coverage making communication with patients challenging in some areas; substance abuse by some patients; medication phobia/tiredness as some patients get tired taking hypertensive medications every days; psychological defection as some of the patients feel that they are already faced or come to end of life; to inadequate BP self-monitoring as some patients don't monitor their BP from time to time, inadequate home treatment.

As for the prescribers, they stressed the following challenges: High treatment cost, inadequate coordination between patients and health facility; inadequate number of staff; lack of standard guideline; inadequate counselling of patients; inadequacy of in-service training; work load perceive heavy; inadequate competence; inadequacy of counsellors and so far counselling; inadequate motivation or remuneration; challenge in knowing side effects as they are too many; inadequate communication; facing challenges with patients who manifest psychological effects of long or life treatment; discriminative allocation of personnel to health programs or interventions, with lesser attention paid to hypertension; non respect of feeding protocol; challenging handling old/aged patients; challenging handling stroke patients; inadequate monitoring or follow up; distance to health facility too long for some patients, difficult accessibility, thus hindering compliance to treatment; faced with patients having breathing rate either fast or abnormal; some patients doubting of the competence of nurses; patients reluctant to change their life style; denial syndromes, refusing to accept the condition; motivation of staff perceived inadequate; challenging managing patients with multiple problems; patients portray economic deficiency/(poverty). Financial constraints on the part of the patients as they cannot meet hospital bills or pay for medications; patients not complying or following prescribed treatment; inadequacy of caregivers; co-morbidity as other illnesses add to hypertension; having to face numerous medications; psychological problems or trauma deriving from long term medication and chronic nature of the disease; lack, few or malfunctioned BP machines; expensive equipment, for instance, BP machines; scarcity of equipment like BP machine; medication perceived expensive; side effects of drugs or treatment; non-availability of some class of anti-hypertensive; non-response to treatment; and challenges with multiple combinations of drugs.

With respect to caregivers, they stressed the following loopholes: The need for proper communication with patients and caregivers about the diagnosis, treatment plan, and importance of medication, as well as giving room to caregivers to explain the patient's problem. Good relationship with patients; need to educate

caregivers and patients on how to use the blob pressure machine, caring for patients; proper counselling; duty consciousness as nurses/healthcare providers are expected to be more passionate; upgrading hospital facilities; in-service training to update nurses' knowledge; adding nurses and medical doctors; upgrading program or improving on hypertension program/intervention; proper diagnosis; getting feedback from patients and caregivers; and getting feedback from nurses.

Barriers highlighted in this study context were grouped under prescription level, organizational level, personnel level, patient level, equipment and facilities and medication level. Response measures were proposed to palliate those problems.

Prescription

Prescribers generally 91.2% (31) prescribed what was deemed necessary for each of their patients. Few said no, blaming the costly medications ("No, at times the anti-hypertensive are quite expensive, so we usually prescribe what is affordable"), and patience refusing treatment due to being bored taking medication for a long time, as emphasized by this prescriber "Denial, long time spent in taking medication".

Organizational level challenges

The majority of prescribers, 55.9% (19) perceived organizational challenges. The cost of medication was the main challenge and was emphasized by 42.1% (8) of the prescribers, as depicted by this quotation "Cost leading to non-compliance". It was followed by the inadequacy of coordination between patients and health facilities. Other challenges included the inadequate number of staff, problems with their competence, inadequate counselling of patients and lack of standard guidelines. Nurses specifically raised the confusing nature of guidelines ("Diversity in guideline, protocols"; "Diversified guidelines, protocols"). It was suggested that treatment should be subsidized to make it more affordable, linking patients to health facilities or adequate coordination and providing adequate staff or personnel. The importance of the capacity building was stressed by this interventional study carried out in Ghana (Gyamfi et al., 2017), whereby 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. The improvement of interpersonal skills and patient education was also mentioned by the nurses as a positive outcome of participation in the intervention. In conclusion, findings suggested that if all nurses received 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 (Gyamfi et al., 2017). 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 were emphasized by 35.3% (12) of the prescribers and ranged from workload perceived heavy, inadequate competence, the inade-

quacy of counsellors and so far counselling, inadequate motivation, the 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 ("Mindset of patients having to take drug for life"), discriminative allocation of personnel to health programs or interventions as revealed by this statement ("No importance placed on hypertension as on HIV/TB"). To palliate this problem, it was suggested the recruitment of more staff, regular in-service training, more counsellors to be recruited, adequate wages or remuneration and adequate communication with patients, and this was also the most emphasized by caregivers, as shared by these quotations ("Proper communication to patients and carers"; "Nurse-to-patient relationship"; "Comfort the patient and giving them assistance"; "Explain diagnosis and lab investigation to patients and caregivers"; "The nurses should explain to patients and caregivers about their diagnostic, treatment plan and discharge follow-up"; "The nurse need to communicate most often with the patient so as to ensure the patient takes the medication"; "Sessions should be made to communicate diagnosis of patient"; "The nurses have to explain about the importance of medications to patients"). More consideration was also requested for hypertension and the creation of more awareness of this effect. Inadequate communication, among others, was given emphasis in other study contexts, as well as patient non-adherence to the treatment of hypertension (Elliott, 2003). Patient noncompliance with prescribed antihypertensive medications was also a problem that contributed 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 (Lefante et al., 2006). One study investigating how providers assess antihypertensive medication adherence revealed that patients were not asked about medication taking in 39 percent of encounters (44). Effective communication strategies and patient-centred counselling can be employed as a means to improve treatment adherence, as heavily supported by the findings of this study.

Follow-up management services

Capacitating patients, caregivers 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 have been studied as a strategy to help improve hypertension control (Brownstein et al., 2007). 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" (Witmer et al., 1995). They serve as lay educators, coaches, navigators, advocates, and liaisons to the healthcare system (Brownstein et al., 2007).

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 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 (Peng et al., 2022). Follow-up services in this study context did not exist or were hindered by a 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 as emphasized mostly by nurses who are at the frontline of care.

Patient self-management

In addition, it was earlier reported by other scholars that 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 in order to optimize health follow-up management for hypertensive patients to further improve their outcomes (Peng et al., 2022). 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 (McNamara et al., 2014). Meanwhile, patients in this study context were perceived as not sufficiently equipped with BP machines and also, many of them, including their caregivers, lacked knowledge of the management of hypertension.

Patient-level challenges

Of all the prescribers, 100% (34) expressed one or more challenges associated with patients. The most emphasized was non-compliance or not following prescribed treatment 58.8% (20) with each prescribers sharing his experience ("Poor drug compliance"; "Adherence/acceptance"; "Ignorance"; "Most will prefer taking phytotherapy"; "Forgetfulness"; "Worries about adherence and I have to prescribe multiple drugs") and this trend aligned with nurses' perception who expressed their concerns in these terms ("Non-compliance to medication"; "Patient drop-out; some patient drop out from taking their medications"; "Poor patient adherence to prescribing treatment"; "Failure for rendezvous by patients") This was followed by financial constraints on the part of the patients as they could not meet up with hospital bills or pay for medications 55.9% (19) as depicted by these quotations ("Financial status of patients"; "Cost of treatment"; "Poverty"; "Lack of money to regularly buy drugs"). Other challenges ranged from many medications, inadequacy of caregivers, 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 the 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 alongside patients' reluctant to change their lifestyle, denial syndromes, refusing to accept the condition and challenging management of patients with multiple problems. Language barrier and substance abuse ("Difficult in convincing patient to cut off some addictive practices"), Medication phobia/tiredness ("Some get tired taking hypertensive medications every days"; "Patients feel frustrated when they have to be on treatment for life") and psychological defection ("Some of the patients feel that they are already faced or come to end of life"; "Some patients are defected") were other challenges raised by the nurses specifically.

Suggestions to address these challenges ranged from the need to subsidize treatment, adequate education and counselling, education on non-pharmacological management, helping patients acquire their own BP machine, education or counselling of patients, proper follow up of patients by making many rendezvous, prescribing a drug with many molecules, formalizing home care, provision of translators and making available food supplements. It has been described by some of the most promising recent advances that non-pharmacologic (e.g., diet, physical activity) as well as pharmacologic approaches to treating hypertension in African Americans are successful. (Lopes et al., 2003) 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 et al. (2004), 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 (Vollmer et al., 1999). Also, the 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 those patients' ideas about treatment may be derived from considerations unrelated to the drugs' pharmacology (Bray et al., 2004). 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 worthwhile to speak about is the Database of Individual Patient Experiences (DIPEx). New drugs, large mega-trials and learned lecturers may pontificate on how we should treat our hypertension patients. 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 (Herxheimer et al., 2000).

Equipment and facility-based challenges

This was raised by 29.4% (10) of the prescribers. They complained mostly of the inadequacy of equipment, with emphasis on BP machines 80.0% (10) as stated by this prescriber "BP machines are few, sometimes not working"; equipment were also perceived to be costly and scarce. The nurses also raised the issue of

equipment inadequacy and generally wished that those equipment should be provided.

Medication-based challenges

All the prescribers raised one or more concerns as far as medication was concerned, where they mostly emphasized the side effects of drugs or treatment 38.2% (13) as depicted by these quotations ("Side effects of the drugs especially combination therapy"; "Most will prefer taking phytotherapy". This was followed by the expensive nature of medication 32.3% (11), the non-availability of some classes of anti-hypertensive, challenges with multiple combinations of drugs, and non-response to treatment. Suggestions for these problems were counselling on the importance of the treatment, subsidizing medications, insurance, adequate dosage, and education on non-pharmacological management and on side effects. Challenges with multiple combinations are not confined to this study context. It was suggested 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 (Krousel-Wood et al., 2005). 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 tablets, recommendation of well-tolerated therapies, and sensitivity concerning cost of pills and attempt to minimize out-of-pocket costs (Elliott, 2003).

The cost of medication as a major hindering factor to compliance with 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 (Fihn & Wicher, 1998). 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 (Mojtabai & Olfson, 2000), particularly for ethnic minorities, those with lower incomes, and those with higher out-of-pocket costs. Insurance coverage is still very poor in this study context, and it was suggested as a way to palliate non-compliance to treatment due to the 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, and 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 among the insured (Chiong, 2008; Woolhandler & Himmelstein, 1988; Moy et al., 1995).

An adaptable approach is to be used in the care and follow-up of hypertensive

patients.

Adaptable models, approaches, frameworks or strategies are generally built from facilitators and barriers. Following the analysis of patients' perceptions of hypertension and its treatment (Svensson & Svensson, 2003), it was depicted in a figure of style that in The Republic, Plato quotes Socrates as saying: "When a carpenter is ill he asks the physician for a rough and ready cure; an emetic or a purge or a cautery or the knife—these are his remedies". This, therefore, implies that health programs should be contextualized to suit the needs, challenges and specificities of the local environment at the time. A number of facilitators and barriers to the care of hypertensive patients were highlighted in the context of this study. Some cut across literature, as debated earlier, but some are peculiar to context. Poverty, poor mobile network coverage, patients not disclosing their contacts, poor road network, and the socio-political crisis affecting the region seriously hindered follow-up and community-based care. The inadequacy of basic equipment like BP machines, drug supply, staff, and staff motivation, the competence of staff, standardized guidelines and cardiologists emphasized in this study context were not common in developed countries. Moreover, nurses complained of lack of airtime and the fact that home follow-up was not yet a norm in their health facility. Psychologically-related hindering factors like patients feeling defeated and traumatized by long-term medication were considered. The need to contextualize healthcare models remained a priority. In this perspective, still, in modelling barriers and enablers to the treatment of hypertensive patients, it was suggested that understanding country-specific factors influencing hypertension care is critical to address the gaps in the management of hypertension (Dhungana et al., 2021). Patient-centred models were also highly advocated, and such frameworks, models or approaches were recommended in other settings (Staffan and Lip, 2003). Patients, as earlier explained, were diversified in their perception and attitude toward hypertension and its management in this study context, thus emphasizing the patient-centred approach (Dhungana et al., 2021), and these recommendations were also considered in developing the adaptable approach for this study context.

## 10. Conclusion

Hypertension was mostly perceived to be controlled, not treated, with major emphasis placed on prevention. Both nurses and physicians recommended the complementarity between pharmacological and non-pharmacological approaches to treatment, with particular attention paid to prevention. Compliance with treatment as well as treatment outcomes 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-po-

litical crisis, and psychological problems such as medication phobia and defection/pessimism. A number 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.

## 11. Recommendations

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

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 the management and follow-up of hypertensive patients in the Fako division of Cameroon. Improve awareness among stakeholders can only be reinforced and sustained by the desire concerted efforts toward curbing the plight of growing hypertension.

Increasing staff in health facilities will reduce workload and enhance their efficiency, which will have direct repercussions on the outcome of care.

Improving the motivation of staff will only foster their efficiency and effectiveness, which will have enormous benefits for the patients and society as a whole.

Training staff on the management of hypertension is necessary and much more important if such in-service training could be continuous, given the constant changes in approaches to caring for hypertensive patients.

Optimal consideration for hypertension in health facilities. This is so important given the increase in hypertensive cases.

The provision of equipment, notably BP machines, because they are indispensable is quality care that should be achieved.

Enhancing the awareness and knowledge of patients and caregivers about hypertension to foster compliance with treatment, home management and follow-up. This is a major external factor that, if not adequately reckoned with, can hinder the outcome of care.

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 schemes. This should be paid sufficient attention in this context where we are faced with a lower-middle-income country with the 2021-2022 household survey suggesting that 23.0% of the population lives below the extreme international poverty line with only $2.15 per person per day adjusted for purchasing power parity.

Capacitating community health workers to support follow-up at a community level, considering the enclave nature of some communities and the disability of many hypertensive patients.

Enhancing the combination of pharmacological and non-pharmacological approaches to treatment is necessary, given the proven efficiency.

Improving road network and mobile network coverage and ending the socio-political crisis to optimize healthcare coverage.

## 12. Limitations

The study faced two major challenges: the inadequacy of finance as it was done essentially out-of-pocket with no grant, and the socio-political crisis in the study area that, from time to time, frustrated the work schedule.

## Ethical Clearance

Ethical approval was 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 the sampled Health units.

## 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. Specific details or references that 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.

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## Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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