Chapter One

1.0.0 Introduction

High blood pressure continues to be a major public health problem in the w ld despite the fact that it is still largely ignored as a public health problem in most developing countries.

1.1.0 Background Information

Hypertension is an important public health problem wor and it is the most widely recognized modifiable risk factor for cardiovascular disease (CVD), cerebrovascular disease (stroke) and end-stage renal disease (Ingelsson et al., 2008). Hypertension is the 3rd global 'killer', according to the World Health Organization, accounting for one in every eight deaths worldwide (WHO, 2002). It increases the risk of stroke, myocardial infarction, congestive heart failure, sudden cardiac death, peripheral vascular disease, and renal insufficiency. Premature mortality from cardiovascular diseases could be prevented, to a considerable extent, by the effective control of hypertension, a major risk factor for this group of diseases (Khot et al., 2003).

Although hypertension related disease is a global health priority (S dat, 2008), it is still largely not recognized as a public health problem in m veloping countries (WHO, 2002). Poulter and others (1984) have noticed that the quickening pace of change and adoption of western lifestyles by people in developing cou ies has led to a sharp rise in morbidity and mortality from cardiovascular diseases, particularly those related to hypertension.

Singh and others (2000) have noticed that hypertension as a risk factor for stroke and Coronary Artery Disease (CAD) has been recognized in d veloped countries since 1950. It is now also considered important in the pathogenesis of cardiovascular disease (CVD) in developing countries. While prevalence and mortality due to CVD is rapidly declining in most developed countries, it is, in sharp contrast, rising in the developing countries. The majority of patients with hypertension either die due to stroke or CAD and heart failure.

High blood pressure is one of the major risk factors for fatal and nonfatal cardiovascular disease events including ischemic heart disease and stroke. Therefore, adequate control of blood pressure is of enormous importance because cardiovascular health is an important indicator of the health status of a population (Wang et. al 2005).

Hypertension measurement errors

According to Rose, (1965), the errors encored during blood pressure measurement have been classified into three categories; systematic error, terminal digit preference and observer prejudice or bias.

(a) Systematic error

Systematic error leads to both intra-observer and inter-observer error. It may be caused by lack of concentration, poor hearing, confusion of auditory and visual cues, etc. The most important factor is failure to interpret the Korotkoff sounds accurately, especially for diastolic pressure (Rose, 1965).

(b) Terminal digit preference

Terminal digit preference refers to the phenomenon whereby the observer rounds off the

pressure reading to a digit of his or her choosing, most often to zero. Doctors may have a 12-fold bias in favour of the terminal digit zero; this has grave implications for decisions on diagnosis and treatment, although its greatest effect is in epidemiological and research studies in which it can distort the frequency distribution curve and reduce the power of statistical tests (Kearly, et a, 1998).

(c) Observer prejudice or bias

Observer prejudice or bias is the practice whereby the bserver simply adjusts the pressure to meet his or her preconceived notion of what the pressure should be. It usually occurs when there has been recording of an excess of pressures below the cut-off point for hypertension and it reflects the observer's reluctance to diagnose hypertension. This is most likely to occur when an arbitrary division is applied between normal and high blood pressure, for example 140/90 mm Hg. An observer might tend to record a favorable measurement in a young healthy man with a borderline increase in pressure, but categories as hypertensive an obese, middle aged man with a similar reading. Likewise, there might be observer bias in over reading blood pressure to facilitate recruitment for a research project, such as a drug trial. Observer prejudice is a serious source of inaccuracy, as the error cannot usually be demonstrated (O'Brien, 1998).

(d) Other errors

Other inaccurate blood pressure readings may be due to over inflation of the cuff or using a cuff that is too small for the arm, brachial arteries being heavily calcified or arteriosclerotic and cannot be fully compressed leading to pseudo hypertension. Clinic or white coat hypertension is also one of the measurements that do n lect the accurate BP reading.

Primary and Secondary Hypertension

Hypertension is classified as primary or secondary. Pr ary or "essential" hypertension has no known cause, however genetic and certain lifestyle tors such as body weight and salt intake are involved. According to Insel and Roth (2004), ninety five percent of persons diagnosed with hypertension fall into this category. The diagnosis is made when no other cause is found. Secondary hypertension is caused by some other medical diagnosis or problem, such as kidney disease, Cushing's syndrome, p gnancy, oral contraceptive use, chronic alcohol abuse or the use of certain medications. Therefore, any participant presenting likewise shall be considered to have secondary hyperte n.

Classification of Blood Pressure

According to the seventh report of the Joint National Committee on the prevention, detection, evaluation and treatment of high blood pressure: the JNC 7 report, hypertension has been classified as Nomotension (Normal BP -120/80 mm Hg), Pre-hypertension (120 – 139 mmHg SBP and 80 – 89 mmHg DBP). Pre-hypertension is not a disease category. Rather it is a designation chosen to identify individuals at high risk of developing hypertension, so that both patients and clinicians are alerted to this risk and encouraged to intervene and prevent or delay the disease from developing. Individuals who are pre-hypertensive are not candidates for drug therapy on th basis of their level of BP and should be firmly and unambiguously advised to practice lifestyle modification in order to reduce their risk of developing hypertension in the future. T en those who have developed

hypertension are classified as Stage 1 and Stage 2 hyp tension depending on the severity of the BP reading, table 1 shows the classification.

Table 1 Classification of Blood Pressure for Adults

BP Classification	SBP mm Hg	DBP mm Hg
Normal	120	80
Pre-hypertension	120-139	80-89
Stage 1 hypertension	140-159	90-99
Stage 2 hypertension	>160	>100

Source: Hypertension 2003:1211.

1.2.0 Literature Review

High blood pressure is an important public health problem, not only in Zambia but worldwide. It is the most widely recognized modifiable isk factor for cardiovascular disease (CVD), cerebrovascular disease (stroke) and end-stage renal disease (Ingelsson et al., 2008). Since hypertension is a global, regional and local public health problem, a review

of literature on this subject is important in understa ding and appreciating the magnitude of the problem.

Hypertension is said to be the third global 'killer', according to the World Health Organization, accounting for one in every eight deaths worldwide (WHO, 2002). It increases the risk of stroke, myocardial infarction, congestive heart failure, sudden cardiac death, peripheral vascular disease, and renal insufficiency. Worldwide prevalence estimates for hypertension may be as much as 1 billion individua nd about 7.1 million deaths per year may be attributable to it (WHO, 2002).

WHO (2008) has noticed that the global burden of disea e is rapidly shifting from communicable diseases to non-communicable diseases with hypertension, cardiovascular diseases and stroke being the chief causes of death globally.

Hypertensive illness emerged from the Global Burden of Disease study as a surprisingly significant contributor to the burden of disease. The measure of calculating disease burden, called Disability Adjusted Life Years (DALYs), allows comparison of the burden of disease across many different disease conditions. DALYs account for lost years of healthy life regardless of whether the years were lost to premature death or disability. Table 1 shows a comparison between communicable diseases and non-communicable diseases worldwide.

Table 2 Communicable diseases Vs Non-Communicable diseases

Causes worldwide	Total death	DALYs
Communicable diseases	17,380 (31%)	615,105 (42. 8%)

Non communicable diseases	33,484 (59.8%)	612,742 (43.2%)

This is an extract from a WHO (2000) report.

The prevalence of hypertension varies widely among dif nt populations, with rates as low as 3.4% in rural Indian men and as high as 72.5% in Polish urban women (Kearney et al., 2004). Differences in genetic background, environmental factors (especially diet and physical activity) and variations in study protocols influence the prevalence of hypertension in adults (Altun et al., 2005). The World Health Organization reports that suboptimal BP (>115 mm Hg SBP) is responsible for 62% of cerebrovasc disease and 49% of ischemic heart disease, with little variation by sex. In addition, suboptimal blood pressure is the number one attributable risk for death throughout the world (WHO, 2002).

1.2.2 Western World (Developed world)

According to WHO (2002), the prevalence of hypertension in economically developed countries, is between 20 and 50%. There have been attempts in the West and Asia to profile hypertensive vascular diseases. The following brief outline gives us a picture. Martinuk et al., (2007) carried out a study in the Asia-Pacific region. This study aimed to quantify the contribution of hypertension to cardiovascular disease (CVD) at the country level, by calculating the sex-specific, population-attributable fractions (PAFs) for fatal ischemic heart disease (IHD) and stroke (haemorrhagic and ischemic) for the World Health Organization Western Pacific and South-east Asian regions. Results in 15 countries with available data, the prevalence of hypertension ranged from 5-47% in men and from 7-38% in women.

Overall, the fraction of IHD attributable to hypertension ranged from 4-28% in men and from 8-39% in women. Corresponding ranges for haemorrhagic stroke were 18-66% and 15-49%, and for ischemic stroke were 8-44% and 12-45%. It was concluded that in the Asia-Pacific region, up to 66% of some subtypes of CVD can be attributed to hypertension, underscoring the immense impact that blood pressure-lowering strategies could have in this populous region.

Guidelines in these countries differ regarding the blood pressure (BP) thresholds at which to initiate drug treatment and the definitions of *high risk*, with the guidelines in the United States being more aggressive than others (Wolf-Maier et al., 2003). According to national surveys conducted in the 1990s, the rates of hypertension treatment and control were lower in 5 European countries and Canada compared with the United States (Martinuk et al, 2007). These findings were consistent with the more aggressive hypertension treatment guidelines in the United States, although the use of aggregate-level data by age group and sex precluded controlling for important patient-level differences, such as pre treatment BP level and hypertensive co morbidities, across countries.

A study done in Costa Ricans by Mendez-Chacon and others (2008) showed that hypertension prevalence in adult Costa Ricans is 65% (ale-60%, female-69%) and the main factors associated with hypertension in this community were age, obesity and fa ily history of hypertension.

Singh and others (2000) carried out a study in which t prevalence of hypertension according to latest criteria of (140/90 mm Hg and more varies between 15–35% in urban

adult populations of Asia. The study showed that in rur l populations, the prevalence is two to three times lower than in urban subjects. It also showed that hypertension and stroke occur at a relatively younger age among Asians. The st y also revealed that the risk of hypertension increases at lower levels of body mass index of 23–25 kg/m2. Overweight, sedentary behaviour, alcohol, higher social class, salt intake, diabetes mellitus and smoking are risk factors for hypertension in most of the count ies of Asia. On the contrally, In Australia, New Zealand and Japan, lower social class is a risk factor for hypertension and stroke. Although hypertension is well recognized as a major ca se of morbidity and mortality in the economically developed world, the importance of hypertension in economically developing countries like most African countries is less well established (WHO, 2002). This is not implying that hypertension is not a big problem in Africa, a review of some work done in some parts of Africa confirm that the problem of high blood pressure cannot be ignored.

Studies in Central & West Africa show that hypertension is a problem in this part of the Region. A community survey done among 1798 urban and r ral Cameroonian showed that in the urban area 16.4% men and 12.1% female were hypertensive and in the rural area, 5.9% women and 5.4% men were hypertensive (Poulter et l 1984). It was noted that hypertension was associated with industrialization.

In the Sub-Saharan region, the African union health ministers meeting in South Africa observed that hypertension and other non-communicable diseases were amongst the emerging public health issues (African Union Health ministers, 2007).

A cross sectional study was carried out by Steve and others (1996) in Cape Peninsular, South Africa. It was meant to determine the prevalence f hypertension, treatment status and factors relating to high blood pressure in Cape Peninsular, South Africa in an urban black community. Results showed that an overall 9.2% of males and 12.9% females were hypertensive according to WHO criteria. In another study done by Steven and others (1996), blood pressures of between 160/95 and 140/90mm re found in 10% males and 10.5% females.

Zimbabwe carried out a national hypertensive survey in 2005 called National Survey Zimbabwe Non-Communicable Disease Risk Factors (ZiNCoDs). The hyper ension Preliminary Report Year: 2005, the information was as tabulated in table 3 and below:

Table 3 Zimbabwe hypertension national survey results (Definition code: Blood Pressure: SBP 140 or more and/or DBP 90mm Hg or more).

Male		
Age group	Prevalence	95 (%) C.I
25+	29.0	27 – 31.1
Female		

Age group	Prevalence	95 (%) C.I
25+	23.2	19.7 – 26.6

Using the definition of SBP 140 or more, the national survey in Zimbabwe revealed that the prevalence of hypertension was high at 29% among men compared to female at 23.2%.

Table 4 Zimbabwe hypertension national survey results (Definition code: SBP 160 or more and/or DBP 95 mmHg or more)

Male		
Age group	Prevalence	95 (%) C.I
25+	8.5	6.2 – 10.8
Female		
Age group	Prevalence	95 (%) C.I
25+	13.3	11.8 – 14.9
Both sex		
Age group	Prevalence	95 (%) C.I
25+	12.2	10.9 -13.6

The prevalence of hypertension among women was 13.3% compared to 8.5% among men after using the definition of SBP of 160mmHg or more and/or DBP of 95mmHg or more. The information in the above tables was extracted from the ational Survey Zimbabwe Non Communicable Diseases Risk factors (ZiNCoDs), Preliminary Report year: 2005

1.2.4 Zambian Situation

A lot needs to be done in establishing the problem of hypertension in Zambia. However, some considerable success has been achieved by the Ministry of Health in making the condition known through Health Information Systems (HI). Other than that, some studies have been done in Zambia. For instance, according to N'gandu (1991), a study of blood pressure levels of 372 rural Zambian schoolchildren aged 7–16 years showed that blood pressure increases with age. It was noted that association between age and blood pressure is decreased when growth is controlled for in the analysis. Girls tended to have either the same or slightly higher mean blood pressure levels at all ages than boys. The main determinants of blood pressure in the children were age, height and weight. Mean systolic blood pressure (SBP) values of the children were lower an those for Nigerian, American and worldwide adolescents of comparable age, whereas mean diastolic blood pressure values were similar to those of American and worldwide adolescents of comparable age. The associations between blood pressure and the three indices commonly used to measure relative obesity, i.e. weight-for-length, weight/height and weight/height, were only significant for weight-for-length after adjusting for height, suggesting that the other two indices may not be appropriate in studies focused on children and should be applied with caution. The non significant associations observed between blood pressure and the other two weight-for-height indices may be attributed to the almost nonexistence of obesity in this sample of children.

In another study done in Northern Province, massive ca egaly (heart weight above 400 g in females and 450 g in males) was studied in 26 Zam amined post mortem. The results showed that the causes were as follows; hypertensive heart disease alone in six

cases; hypertensive and alcoholic heart disease in two cases; alcoholic heart disease alone in five; alcoholic and pulmonary heart disease in one; alcohol with possible hypertensive heart disease in one. Eleven cases were classified as being idiopathic mainly due to lack of data and in five of this hypertension was suspected as being the cause. Therefore, it can be concluded from this study that hypertension had a central role in the causation of massive cardiomegaly. Follow-up of several patients enabled observations on the car effects of hypertension and alcoholism operating simultaneously a d on the relationship between hypertension and congestive cardiomyopathy.

Yikona (2001) noted that Zambia has a population of over 10 million but has no obvious policy on non-communicable diseases such as hypertension. Other tha routine medical consultations and administering of medication, no Public Health profiling has so far been done in Zambia. It is only recently that the World Health Organization (WHO) initiated a community survey on hypertension in Lusaka. It is envisaged that similar studies will also be undertaken in the rural parts of the country. Results for the studies done are not yet published.

Literature review shows that there are several factors that put people at risk for hypertension; some factors can be controlled while oth s cannot be controlled. For instance, gender, age, heredity and race are factors that cannot be controlled. While lifestyle related factors such as obesity, diet, lack of exercise, stress, the use of certain medications, smoking, and excessive alcohol consumption can be controlled.

(a) Age

Research has generally shown that the prevalence of hy ertension increases with advancing age. More than half of people aged 60 to 69 years old and approximately three-fourths of those aged 70 years and older are affected (Burt et al., 1995). The age related rise in SBP is primarily responsible for an increase in both incidence and prevalence of hypertension with increasing age (Vasan et al., 2001).). Whereas the sh rt-term absolute risk for hypertension is conveyed effectively by incidence rates, the long-term risk is best summarized by the lifetime risk statistic, which is the probability of developing hypertension during the remaining years of life (either adjusted or unadjusted for competing causes of death). Framingham Heart Study investigators recently reported the lifetime risk of hypertension to be approximately 90% for men and women who were non-hypertensive at 55 or 65 years old and survived to age 80 to 85. Even after adjusting for competing mortality, the remaining lifetime risks of hypertension were 86 to 90 en and 81 to 83% in men (Vasan et al., 2002).

Data from observational studies involving more than 1 million individuals have indicated that death from both ischemic heart disease and stroke ses progressively and linearly from BP levels as low as 115 mm Hg systolic and 75 mm Hg diastolic upward (Lewington et al., 2002). The increased risks are present in all age groups ranging from 40 to 89 years old. For every 20 mm Hg systolic or 10 mm Hg diastolic rease in BP, there is a doubling of mortality from both ischemic heart disease and stroke. In addition, longitudinal data obtained from the Framingham Heart Study have indicate hat BP values in the 130 to 139/85 to 89 mm Hg range are associated with a more th n 2-fold increase in relative risk

from cardiovascular disease (CVD) compared with those with BP levels below 120/ 80 mm Hg (Vasan et al., 2001).

(b) Diet

Ingestion of high levels of dietary salt is an importa t risk factor that is associated with increased blood pressures (Cooper and Stamler., 1997). For instance, African Americans are at higher risk of high blood pressure because, in addition to diets high in caloric intake, they generally have diets that contain sodium in excess of physiological requirements (Jen et al., 2007).

Dietary patterns also may put African Americans at increased risk of high BP. In addition to diets high in caloric intake, African Americans genera diets that contain sodium in excess of physiological requirements (Jen et al., 2007 . This is an important risk factor, as habitual ingestion of high levels of dietary salt is associated with increased blood pre ures (Cooper et al., 1997; Stamler, 1997). Salt-sensitivity, or greater BP variability in relation to sodium ingestion, is an important factor in the development of hypertension, and 73% of hypertensive African Americans are considered to be salt-sensitive (Svetkey et al., 1997).

(c) Stress and Relaxation

A number of investigators have also shown a relationship between stress and elevated BP, but without conclusive evidence for a causal relationship (Chobanian et al., 2003). However, stress reduction therapy has shown significant decreases in both systolic (SBP) and diastolic blood pressure (DBP) at three months after a behavioral stress management

intervention (Alexander et al 1996), with additional evidence that stress reduction techniques can reduce BP for up to12 months (Spence et al 1999).

Some literature have shown that, although studies have demonstrated a significant long-term effect of relaxation methods on blood pressure reduction, relaxation therapy may enhance an individual's quality of life and may have independent effects on lowering coronary heart disease risk.

(d) Adequate Physical Inactivity

Epidemiological studies suggest that regular aerobic physical activity may be beneficial for both prevention and treatment of hypertension, to enable weight loss, for functional health status, and to diminish all-cause mortality and risk of cardiovascular disease. 30 minutes of brisk walking most days of the week at target heart rate ([220-age] x 75% = target heart rate) is adequate, inexpensive, and effective. Other aerobic activities (biking, swimming, jogging, etc.) may be more enjoyable. Resistive isotonic activities, when done as the only form of exercise training, are not recommended to lower blood pressure in hypertensive patients.

Many of the disparities noted in the prevalence, morbidity, and mortality of hypertension globally may be attributed to disparities in the presence of the identified causal risk factors (Douglas et al., 2003). In the US for instance, racial disparities are noted in levels of physical activity.

African American men and women are nearly two times as likely to be physically inactive as their Caucasian counterparts (Crespo et al., 2000), with two-thirds of African American women being physically inactive (Kruger et al., 2007).

(e) Obesity

Hypertension is closely correlated with excess body we he prevalence of hypertension is 50% higher among overweight individuals, and 20 to 30% of hypertensive patients are overweight (Crespo et al 2000).

Disparities in weight are noted; Research studies have ocumented the positive effects of weight reduction as a strategy for blood pressure cont ol. Whenever indicated, weight reduction should be recommended either as an initial non-pharmacologic therapy or as an adjunct to pharmacologic therapy. The decrease in blood pressure is related to the amount of weight loss. However, even an initial loss of as little as 10 pounds can have a positive effect on blood pressure. Weight loss can also improve the efficacy of antihypertensive medications and the cardiovascular risk profile. Initial weight loss and long-term weight control are both enhanced by a regular exercise progra . with the prevalence of both obesity and extreme obesity higher for African Americans than non-Hispanic Whites, and extreme obesity almost 2.5 times greater for African Americans (Ogden et al., 2006).

(f) Alcohol Consumption

Several epidemiological studies have demonstrated an a sociation between alcohol consumption and blood pressure. According to Yoshita et al., (2005), alcohol affects both

systolic and diastolic pressures, but its effects appear to be greater on systolic pressure. Significant elevations in blood pressure have been shown in individuals who consumed an average of at least three standard drinks per day comp d with non-drinkers. Alcoholism may cause hypertension, and the alcoholic is less like espond to any hypertension treatment recommendations. Some persons may develop transitory hypertension during the first days of detoxification. Alcohol is also a concen ted calorie source that does not provide any nutrients. Reducing alcohol intake can help with weight reduction and may decrease triglyceride levels. The recommendation is to not exceed a daily alcohol intake of 30mL of ethanol. 30 ml of ethanol is equivalent to two drinks per day. It is recommended that men have no more than one ounce of ethanol per day (two drinks) and women have no more than 0.5 ounce of ethanol per day (one drink). One drink is 360 ml of beer, 150mL of wine or 45ml of 80 proof liquor (Tobe et al., 2006).

(g) Smoking

Recent data using ambulatory blood pressure monitoring suggests that nicotine may indeed increase blood pressure and could account for some degree of blood pressure lability. In addition, it is a major risk factor for atherosclerotic cardiovascular disease. At each visit, establish tobacco use status and follow the NGC summary of the ICSI Tobacco Use Prevention and Cessation for Adults and Mature Adolescents guideline. (WHO, 2002).

Literature review seems to persistently point to a number of reasons for having variations in the prevalence of hypertension in different parts of t e world. These disparities are due to differences in genetic background, environmental facto s such as diet, physical activities

and variations in study protocols. However, literature review confirms that hypert
major public health problem worldwide and needs appropriate public health intervention. Table 5 below shows the positive impact of lifestyle m ication among people with hypertension.

Table 5 Lifestyle Modifications to Prevent and Manage Hypertension

Modification	**Recommendation**	**Approximate Systolic Blood Pressure (SBP) Reduction (Range)**
Weight reduction	Maintain normal body weight (body mass index 18.5 to 24.9 kg/m^2)	5 to 20 mm Hg/10 kg
Adopt Dietary Approaches to Stop Hypertension (DASH) eating plan	Consume a diet rich in fruits, vegetables, and low-fat dairy products with a reduced content of saturated and total fat.	8 to 14 mm Hg

Dietary sodium reduction	Reduce dietary sodium intake to no more than 100 mmol per day (2.4 g sodium or 6 g sodium chloride).	2 to 8 mm Hg
Physical activity	Engage in regular aerobic physical activity such as brisk walking (at least 30-45 minutes per day, most days of the week)	4 to 9 mm Hg
Moderation of alcohol consumption	Limit consumption to no more than 2 drinks (e.g., 24 oz. beer, 10 oz. wine, or 3 oz. 80 proof whiskey) per day in most men and to no more than one drink per day in women and lighter-weight persons.	2 to 4 mm Hg

From the research designs in the previous studies, it is ev nt that there have been fewer studies looking at the incidence of hypertension. Howe , most of the studies done have been cross sectional experimental and non experimental. A majority of them have been exploratory in nature than analytic.

1.3.0 Statement of the problem

Hypertension is a significant public health problem in Zambia. However, the burden of hypertensive illness on health and productivity in Zam has long been profoundly underestimated. A review of patients' records at UNZA Clinic shows that hypertension is a problem in the University of Zambia (UNZA) requiring public health interventions. This can be seen from the 2008 Quarterly reports for hypertension cases among UNZA members of staff that go to UNZA Clinic for medical services. The records indicate that in the first

quarter (January to March) these accounted for the 6.41% whilst the second quarter (April to June) had 7.2%. Meanwhile, the third quarter (July to September) had 7.8% and the last quarter (October to December) had 7.4%. (UNZA Clinic, 2008), as shown in table 6 below.

Table 6 HPT cases of staff at UNZA Clinic (2008 Quarterly reports, UNZA Clinic)

Quarter	Proportion
January – March	6.41%
April – June	7.2%
July – September	7.8%
October – December	7.4%

A further review of the 2008 records shows that 46 peo were taking antihypertensive drugs. Of the 46, 28 were UNZA academic staff, 13 were A non academic staff and 5 were non UNZA staff, i.e. 60.87%, 28.26% and 10.87% re pectively as shown below in table 7.

Table 7 People on antihypertensive drugs in 2008 accor g to staff category

Staff category	Number out of 46	Percentage
UNZA academic Staff	28	60.87%
UNZA non academic Staff	13	28.26%
Non UNZA Staff	5	10.87%

From this information it is clear that the problem of hypertension among UNZA academic staff cannot be ignored. Academic staffs (Lecturers) in the University are at a higher risk of developing hypertension partly due to the perceived high stress levels which come as a result of work overload. University lecturers are the obvious elite of any community; therefore, it makes sense to say that they do more work. For instance, they do consultancy work, teach and study to keep themselves updated with new technology and information. The other risk factors for developing hypertension are associated with their status in the community. For instance, University academic members of staff hold a high status in the community and because of prestige some are involved in excessive alcohol consumption, fast foods i.e. fried with undisolved salt. All this is coupled with lack of physical exercises due to availability of easy motorized transport facilities and lack of free time for relaxation.

The University of Zambia academic staff undergo training and learning for a long period of time. A lot of resources are spent in training a lecturer. Therefore, early intervention by adoption of healthy lifestyles could reduce the prevalence of hypertension among lecturers. It could also decrease the rate of progression of blood pressure to hypertensive levels with age, or prevent hypertension entirely among UNZA lecturers.

It's unfortunate that public health research at the University of Zambia has not considered hypertension as a thrust. The result is that the problem has not been estimated. In consequence there has been no drive to quantify the pa erns of the disease. In short, at the moment there is no institutional representative datase owing the gravity of the problem.

This scenario particularly for University of Zambia Clinic creates operational management problems. These could be in the form of standard protocols to manage diseases, epidemiological profiling for prevention and drug stoc ing.

1.3.1 Justification of the study

- Like all prevalence surveys, this study will provide a pportunity for the University management to make an estimation of the potential dema d for improving our medical facilities and the economic impact of the disorder. It is envisaged that from this project, the experiences shall be transferred to the Ministry of Health. This will help in district health plans and strategies for effective action at the community level later on.
- At the moment there is indeed a dearth of literature on the outlook of hypertension and how it could be integrated in local action plans and disease prevention. Therefore, the study generated first hand data. With the data that has been generated, it is hoped that epidemiological typologies will be developed that will be vital in augmenting action plans.

1.3.2 Research question

Drawing from the problems enumerated in the statement of the problem, this study was premised on the following research question that has been answered:

- What is the prevalence and factors associated with hypertension among UNZA academic staff?

1.3.3 General objective

The general objective of the study was to explore the prevalence and factors associated with hypertension among full time University of Zambia acad mic members of staff.

1.3.4 Specific objectives

The specific objectives of the study were as follows:

- To determine the prevalence of hypertension among full-time University Of Zambia academic members of staff.
- To determine the factors associated with high blood pressure among full-time University of Zambia academic staff members.

Chapter two

2.0.0 Methodology

Research setting and study population

The study was conducted at the two campuses of the University of Zambia, namely: Great East Rood Campus and the Ridgeway Campus in the Capital city of Zambia- Lusaka. The study units were the University of Zambia full-time academic staff drawn from different (schools) clusters within the University of Zambia. The respondents included both male and female lectures disregarding their age and marital status.

2.1.0 Research design

This was a cross sectional study restricted to the prevalence a d factors associated with hypertension among full-time UNZA academic staff.

2.1.1 Identification of variables

Dependent Variable: Hypertension

Independent Variables:

- Alcohol consumption
- Smoking
- Stress (work overload)
- Physical inactivity
- Age
- Obesity/Overweight

Table 8 shows the selected variables and their corresp ding indicators in the tabular form. Note that the Body Mass Index (BMI) references are according to WHO, 1995 which states that BMI of <18.5 = Underweight, 18.5-24.9=Normal weight, 25-29.9= Overweight and 30and above=Obese.

Variable type	Indicator
Stress (Work overload)	. Teaches more than the recommended No. of Classes and does office work at home three or more week days . Teaches recommended No. of Class and doesn't do office at home
Obese	. Body Mass Index of 30 and above (Obese) . Body Mass index of 18.5 – 24.9 (Normal weight)
Overweight	. Body Mass Index of 25 _ 29.9 (Over weight) . Body Mass index of 18.5 – 24.9 (Normal weight)
Alcohol	. Takes beer . Does not take beer
Smoking	. Smokes Cigarettes . Does not smoke cigarettes
	. Does physical exercises

Physical exercise	. Does not do physical exercises
Age	. 45 years and below . Above 45 years old

Table 8 Variables and indicators

Definition of Hypertension

The definition of high blood pressure has changed over e and differs between guidelines proposed by expert bodies (Wang et al 2005). For this study, the definition of hypertension was systolic blood pressure of 140 mm Hg or more and/or diastolic blood pressure of 90 mm Hg or more, however, we cannot determine that someone has high blood pressure problems from readings on one day. Therefore, confirma of high blood pressure is based on the initial visit, plus two follow-up visits with at least two blood pressure readings at each visit. The other groups of people who will be def as having hypertension are those who have been on treatment for hypertension and those who already know that they have hypertension but are not on treatment for some reasons. However, according to the seventh Report of the Joint National Committee on detection, p vention and Treatment of Hypertension (JNC 7), goal blood pressures measured out of the office setting should be less than 135 mm Hg systolic and less than 85 mmHg diastolic. For patients with a history of heart failure, goal office blood pressures are less than 130 mmHg systolic and less than 80 mmHg diastolic. For patients with chronic kidney disease, goal office blood pressures are less than 130 mmHg systolic and less than 80 mmHg diastolic. While for patients with

diabetes mellitus, goal office blood pressures are less than 130 mmHg systolic and less than 80 mmHg diastolic.

2.1.2 Selection criteria

(a) Inclusion criteria

The participants in this study were only University of Zambia full-time academic members of staff who are willing to have their blood pressure measured and have signed the consent form. Participants enrolled in the study included both those who knew their hypertension status and these who did not know their hypertension status.

(b) Exclusion criteria

The exclusion criterion was all non University of Zambia academic staff, all part-time UNZA academic Staff and those full-time UNZA academic staff who were not willing to sign the consent form.

2.2.0 Sampling and sample size

(a) Sampling

Cluster sampling was employed, Clusters were represented by different schools and samples were drawn from different clusters of the University Of Zambia. The University of Zambia has nine Schools in total. The school of Education was divided into two because it ha he largest number of full-time lecturers, bringing the number of clusters to ten i.e. School of law, Veterinary Medicine, Natural sciences, Engineering, Mines, Agricultural Science, Medicine, Humanities and Social Sciences, Education 1 and Education 2).

From each of the ten clusters (Schools), ten participa ere selected using simple random sampling procedure. The sampling frame was the number of offices for full-time lecturers in each cluster. The sample size was determined using the standard formula. The study was willing to tolerate an absolute sampling error of up to 5 percent. The power of the study was 95 percent.

(b) Sample size

In order to sample a good number of consenting adults who are representative of the community, the expected frequency under study of 7% and the precision of 5% at 95% confidence Interval (C.I) were used.

Standard formula for sample size

The sample size was calculated using the standard form below;

Sample size (ss) = $\frac{Z^2 \times P \times (1- P)}{}$

C^2

Where:

Z = 1.96, the factor from the normal distribution.

P= Estimated period prevalence. (Percentage picking a hoice, expressed as a decimal = 7 percent).

C= Confidence Interval expressed as a decimal = 5 percent.

SS = $\frac{1.96^2 \times 0.07 \times (1- 0.07)}{0.05^2}$ = 100.035264 = **100**

The sample size was estimated at 100 from the above ca ulation.

2.3.0 Data collection techniques and data analysis

2.3.1 Data collection techniques

Data collection from the selected participants was don using a self-administered questionnaire. This was followed by checking the blood pressure using a blood pressure machine. The weight was measured using the Standing Sc le and Height Measure was used to measure the height of the participant. Automatic Blood pressure machines were used to avoid certain human errors. Clients were seated in a c air, with their backs supported and their right arm bared at the level of the heart. Systolic Blood Pressure (SBP) and Diastolic Blood Pressure (DSP) were measured after the subject h sted for 10 minutes. The client's arm was placed at heart level in a sitting position. Measurements were taken thrice

(every 2 minutes) and the mean was recorded for all cases. Confirmation of the blood pressure reading was done for participants who were found to be hypertensive for the first time

Confirmation was based on the initial visit, plus two follow-up visits with two blood pressure readings at each visit. Those found to be hypertensive after confirmation, were referred to UNZA clinic for thorough medical history, physical examinations, routine laboratory tests and other diagnostic procedures. Thos who were found requiring treatment were given treatment. Participants already on antihypertensive treatment or who already knew that they have hypertension did not undergo the confirmation of two follow-up visits

2.3.2 Data processing and analysis

Data was analyzed using the statistical software package for social scientists (SPSS) 15.0 for windows. Frequency tables, cross tabulations, chi-square and logistic regression to detect and quantify the effect of independent variables on hypert ependent variable).

Questionnaires were given identification numbers serially from 001 to 100. Both open ended and closed ended questions were coded by assigning numbers to response categories. The coded questions were then entered into the computer. The data analysis consisted

mainly of running frequency tables and the variables were cross tabulated. The logistic regression was used to detect and quantify the effect of independent variable on hypertension among full-time UNZA academic staff.

2.4.0 Ethical Considerations

The study involved human subjects; therefore, clearance was obtained from the Biomedical Ethics committee of the School of medicine at the Univ rsity of Zambia. The Directorate of the post graduate studies of UNZA granted permission to proceed with research after clearance was obtained from ethics committee and department of Community Medicine of School of Medicine, UNZA. Permission was sort from the egistrar of the University of Zambia to carry out a study among UNZA academic staff. Above all, written consent was obtained from each participant, after explaining to them fully the purpose of the study. Participation was voluntary, confidentiality and privacy was maintained. Questionnaires were assigned numbers instead of individual names.

2.5.0 Pre-testing of the Questionnaire.

A pre-test of the questionnaire was conducted at the University of Zambia Clinic to assess the appropriateness and sequence of questions. The out ome of pre-test helped to refine the instrument before the actual full study.

Chapter three

3.0.0 Data presentation and analysis

3.1.0 Socio–demographic characteristics of the respondents

Sex distribution

The majority of the respondents were males and they represented 73 percent of the sample.

Age distribution

The mean age of the respondents was 43.23 years and th standard deviation (SD) was 9.33 years.

Table 9 Participation levels according to age

Age	Frequency (n)	Percent
25 - 44	56	56.0
45 - 64	44	44.0
Total	100	100.0

SEX

It was observed that the majority of respondents were male (73%) while females accounted only for 27%.

Marital status

It was noted that 75 percent of the respondents were m rried and 14 percent were single (table 10).

Table 10 Marital status of the respondents

Marital status	Frequency	Percent
Married	75	75.0
Single	14	14.0
Divorced	4	4.0
Widowed	4	4.0
Separated	3	3.0
Total	100	100.0

Alcohol consumption and Smoking

Table 11 Drinking and Smoking habits among respondents

		Frequency (n)	Percent
Alcohol	Yes	67	67.0
	No	33	33.0
Smoking	Yes	43	43.0
	No	57	57.0

It was noted that 67 percent take alcohol and 43 percent of the respondents smoke cigarettes.

Physical activity

Table 12 Involvement of respondents in physical exerci es

Physical exercises	Frequency	Percent
Yes	34	34.0
No	66	66.0
Total	100	100.0

The proportion of respondents that reported as not hav n involved in physical exercises was 66 percent and only 34 percent were involved in physical activities.

Stress

Stress in our study was expressed in form of workload. That was measured by the number of classes taught. The proportion of respondents who t ive or more classes was 71 percent.

Table 13 showing proportion of lecturers and classes to teach in an ideal situation

Number of classes	Frequency	Percent
Most	85	85.0
More	13	13.0

A few	2	2.0
Total	100	100.0

Table 13 shows the proportion of lecturers and classes they are supposed to teach in an ideal situation but on the contrally are teaching more than the recommended number of classes. Most respondents (85%) reported that they teach more than the recommended number of class.

Table 14 proportion of respondents who do office work t home and how often.

	Frequency	Percent
Twice	5	5.0
Most of the time	60	60.0
The whole week	35	35.0
Total	100	100.0

Table 14 shows percentage of lecturers who do office work at home and how often they do that in a week. It was observed that 60 percent of lec rers do office work at home most of the time.

Obesity

It was noted that 28 percent of respondents were obese.

3.2.0 Prevalence of hypertension

The prevalence of hypertension among full-time UNZA academic Staff was determined. The sample comprised 100 full-time UNZA lecturers of whom 39 percent had Systolic Blood Pressure of 140mm Hg or more and/or Diastolic Blood Pressure of 90mm Hg or more.

Hypertension awareness

Out of the 39 hypertensive respondents, 5 percent of the participants got to know that they were hypertensive within the last year (2008) and 30 p rcent knew their status more than five years ago. Table 15 shows the distribution of staff by hypertension awareness.

Table 15 showing hypertension awareness

Period when respondent was aware of being hypertensive	Frequency	Percent
Within the last year (2008)	5	5.0
1-5 years ago	4	4.0
6-10 years ago	10	10.0
11-15 years ago	8	8.0
16-20 years ago	5	5.0
More than 20 years ago	7	7.0
Total	39	39.0

Treatment status

It was observed that all the respondents who were hype tensive were on treatment.

3.3.0 Determinants of hypertension

Sex in relation to hypertension

Table 16 Sex * Blood pressure Cross tabulation

Sex	Hypertensive	Non-hypertensive	Total	Chi-Square	P value
Male	28 (71.8%)	45 (73.8%)	73	0.05	0.828
Female	11 (28.2%)	16 (26.2%)	27		
Total	39 (100%)	61 (100%)	100		

There was no significant association between sex and b ing hypertensive among full-time UNZA academic staff (p= 0.828)

Alcohol in relation to hypertension

Table 17 Alcohol* blood pressure Cross tabulation

Alcohol	Hypertensive	Non-hypertensive	Total	Chi-Square	P value
Yes	21 (53.8%)	46 (75.4%)	67	5.00	0.025
No	18 (46.2%)	15 (24.6%)	33		
Total	39 (100%)	61 (100%)	100		

There was a significant association between alcohol consumption and being hypertensive among full-time UNZA academic staff ($p = 0.025$).

Smoking in relation to hypertension

Table 18 Smoking versus blood pressure Cross tabulation

Smoking	Hypertensive	Non-hypertensive	Total	Chi-Square	P value
Yes	19 (48.7%)	24 (39.3%)	43	0.85	0.356
No	20 (51.3%)	37 (60.7%)	57		
Total	39 (100%)	61 (100%)	100		

There was no significant association between smoking a d having hypertension among full-time UNZA academic staff (p = 0.356).

Physical activity in relation to hypertension

Table 19 Physical exercises* blood pressure Cross tabulation

Physical activity	Hypertensive	Non-hypertensive	Total	Chi-Square	P value
Yes	9 (23.1%)	27 (44.3%)	36	4.63	0.031
No	30 (76.9%)	34 (55.7%)	64		

Total	39 (100%)	61 (100%)	100		

It was observed that physical activity was significantly associated with hypertension. It was observed that physically inactive respondents tended to have hypertension compared to active respondents (p = 0.031).

Obesity in relation to hypertension

Table 20 Obesity versus blood pressure Cross tabulation

Overweight/Obese	Hypertensive	Non-hypertensive	Total	Chi-Square	P value
No	18(46.2%)	25 (41.0%)	43	0.26	0.610
Yes	21 (53.8%)	36 (59.0%)	57		

Total	39 (100%)	61 (100%)	100		

There was no significant association between obesity and being hypertensive (p= 0.610).

Stress (workload) in relation to hypertension

Table 21 teaching* blood pressure Cross tabulation

Number of class taught	Hypertensive	Non-hypertensive	Total	Chi-Square	P
5 or more	22 (56.4%)	49 (80.3%)	71	6.61	0.010
Less than 5	17 (43.6 %)	12 (19.7%)	29		
Total	39	61	100		

It was observed that the respondents who taught more than five classes were more likely to be hypertensive (p=0.010)

Table 22 Doing Office work at home* Blood pressure Cross tabulation

Office work at home	Hypertensive	Non-hypertensive	Total	Chi-Square	Pvalue

Twice	28(71.8%)	37(60.7%)	65		
Most of the time	11 (28.2%)	24 (39.3%)	35	1.30	0.255
Total	39	61	100		

There was no significant association between doing office work at home and being hypertensive (p= 0.255).

3.4.0 Logistic Regression

Table 23 Logistic Regression

Factor	Options	Adjusted Odds Ratio	95% C.I
Alcohol consumption	No	0.32	0.13, 0.79
	Yes	1	

According to the logistic regression, the respondents who did not consume alcohol were 28% less likel to be hypertensive compared to those who drank alcohol.

Chapter four

4.0.0 Discussion of findings

4.1.0 Prevalence of hypertension among full-time UNZA academic Staff

The prevalence of hypertension among full-time UNZA lecturers was 39 percent. This finding shows that hypertension is very prevalent among full-time UNZA academic staff. We found no other similar studies whose results we can compare ours with. However, studies done among secondary school teachers suggest that hypertension is more prevalent among teachers.

4.2.0 Factors associated with hypertension.

The only factor that was found to be significantly associated with hypertension in multivariate analysis amongst full-time UNZA academic staff was alcohol consumption. In this study it was noted that majority (66.7%) of full-time UNZA lecturers took alcohol. Alcohol is one of the common risk factors for high blood pressure in most studies done on hypertension (Abramson et al., 2010; Tobe et al., 2006; Yoshita et al., 2005).

Only a third of the lecturers were involved in physica xercises. Despite physical exercises being highly associated with hypertension in most research work done on hypertension (Rguibi and Belchsen, 2007; Luke et al. 2005; Sobngwi et al., 2002), this study did not find physical exercises to be significantly associated with hypertension in the multivariate analysis although it was significant in a bivariate an lysis. Stress was reported in form of teaching five or more classes and doing office work at home on the expense of relaxation.

None of these was significantly associated with hypert nsion in our multivariate analysis. However, respondents who taught more than five classes were more likely to be hypertensive in bivariate analysis compared to those who taught less than five classes.

Obesity was not significantly associated with hypertension among the respondents both in bivatriate and multivariate analysis. This is not consistent with most studies on hypertension (Crespo et al. 2000).

5.0.0 Study limitations

The study had a number limitation and some of these include the misreporting, as the data was collected through self-completion of the questionnaire, it is possible to have deliberate misreporting. There may also be recall bias; in that participants may fail to recall whether or not they had a previous diagnosis of hypertension. Ass ent of smoking status was not validated by biomarkers, such as nicotine or cotinine levels or exhaled carbon monoxide; it is difficult to estimate the extent of any reporting biases that may have occurred. The number of female participants was far less than that of the male counter parts; therefore it was not easy to compare the two. The study was going to be more comprehensive if we had a comparison group. This would have eliminated the bias since lec urers belong to middle / high social class. If resources were enough the study would include Laboratory investigations. Some of these laboratory investigations are needed for determining presence of target organ disease and possible causes of hypertension. It is not possible to relate the observed associations to causality since in a cross sectional study both the exposure and the outcomes have already occurred. It is not known whether alcohol caused hypertension or that respondents took alcohol as a coping strategy for eing hypertensive.

Chapter five

6.0.0 Conclusion and Recommendations

6.1.0 Conclusions

The prevalence of hypertension among full-time UNZA academic staff was high at 39 percent.

Alcohol consumption was significantly associated with hypertension.

6.2.0 Recommendations

1. Policy-makers and public health specialists should acknowledge the existence of hypertension among academic staff and formulate policy on prevention as hypertension is a silent killer.

2. Lifestyle modifications should be the cornerstone of the initial therapy for hypertension. Clinical studies show that the blood pressure-lowering effects of lifestyle modifications can be equivalent to drug monotherapy. Lifestyle modification is best initiated and sustained through an edu ational partnership between the patient and a multidisciplinary health care team. Alcohol consumption should be discouraged among patients suffering from hypertension.

3. The University should regulate the operations of the University beer drinking outlets, so that they are open only during outside University working hours and do not close very late in the night. This will help regulate the dr ing habits of the academic staff.

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ANNEX

APPLICATION FORM TO BIOMEDICAL RESEARCH ETHICS

THE UNIVERSITY OF ZAMBIA

BIOMEDICAL RESEARCH ETHICS COMMITTEE

Telephone: 256067

Ridgeway Campus

Telegrams: UNZA, LUSAKA

P.O. Box 50110

Telex: UNZALU ZA 44370

Lusaka, Zambia

Fax: + 260-1-250753

E-mail: unzarec@zamtel.zm or unzarec@unza.zm

Assurance No. FWA00000338

IRB00001131 of IOR G0000774

APPLICATION FOR ETHICAL APPROVAL FOR PROPOSED RESEARCH

INVOLVING HUMAN PARTICIPANTS

To be submitted in 25 copies to the Secretary of the R search Ethics Committee

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1. TITLE OF STUDY:

A STUDY TO DETERMINE THE PREVALENCE AND FACTORS ASSOCIATED WITH HYPERTENSION AMONG FULL-TIME UNZA ACADEMIC STAFF

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2. PRINCIPAL INVESTIGATOR:

Name: DAVID MULENGA **Qualifications: BS , Dip. Clinical Medical Sciences**

Present Appointment/Affiliations: **Clinical Officer General – UNZA Clinic**

3a. OTHER INVESTIGATORS:

Name: **Qualifications:**

Present Appointment/Affiliations:

Name: **Qualifications:**

(Other names to be included on a separate page.)

3b. SUPERVISORS:

Name: Prof. Seter Siziya Qualifications: BAEd, MSc, PhD, DLSHTM, Cstal, FRCS

Present Appointment/Affiliations: Head of Department-UNZA, Community Medicine Department.School of Medicine.

Name: MR. Y. BANDA Qualifications: MPH, BSc.

Present Appointment/Affiliations: Lecturer-UNZA, Community Medicine

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4. SUMMARY OF PROPOSED RESEARCH:

To include aims and objectives, participants to be studied, research methods

(Questionnaire, physical examination, specimens to be collected, laboratory

Investigations, standard and experimental therapies, e ironmental changes, etc.) and statistical analysis. Simple or lay terminology should be use s much as possible.

(Use not more than one additional A4 sheet if necessary.)

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5. ARE THE PARTICIPANTS DEPENDENT ON ANY OF THE INVESTIGATORS?

As students:	**No***	**As employees:**	**No***
In other ways:	**No**		

If 'Yes' to any of the above, give details:

_____

6. POSSIBLE BENEFIT TO PARTICIPANTS:

It will assist those who may not know that they are hy ertensive to seek medical advice and treatment if found to be having a problem f hypertension.

_____

7. POSSIBLE DISADVANTAGES TO PARTICIPANTS:

No possible disadvantages to the participants

_____

8. POSSIBLE BENEFITS TO THE COMMUNITY:

- **The study has potential of providing baseline data that could be used in improving people's lives.**

- **The study will provide information that is important in proper utilization of Institutional health costs in order to give effective and efficient care to the community through the development of responsive and effective interven ions.**
- **The University Community will have an opportunity of m king an estimation of the economic impact of the disorder and the potential demand for the improvement of the medical facilities.**

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1. BUDGET:

(a) Financial support (requested or granted):

No*

(b) Are there costs which will be carried by other institu ions (e.g. the Hospital)?

No*

(c) Are there costs which will be carried by the participa ts involved (e.g. travel,

Accommodation, meals, treatment)?

No*

(d) Will the care or the time spent in hospital be pr longed?

No*

If 'Yes' to any of the above, give details:

---

2. SUBMISSION:

Attachments include the following in 4 copies each:

(a) The full protocol **Yes***

(b) Forms of Questionnaire **Yes***

(c) Informed Consent Form **Yes***

(d) Approval from the appropriate Research Committee **No***

*** Delete appropriate.** **NA: Not applicable**

DECLARATION:

I……DAVID MULENGA…… (Full Name)

Apply to the Research Ethics Committee of the Universi y of Zambia for approval of the

above research proposal involving human participants, as conforming with recognized ethics Standards and as not impinging on the rights of the individuals.

Date: 27th October, 2009……. Signed: ……

PRINCIPAL INVESTIGATOR

Contact Address:

UNIVERSITY OF ZAMBIA,

UNZA CLINIC,

P.O BOX 32379.

LUSAKA

…….

Telephone No. 0978367217 Fax No: ……. Email: m ngingo@yahoo.co.uk

Date: …27th October, 2009. **Signed: ……**

HEAD OF DEPARTMENT/SUPERVISOR

APPROVAL OF STUDY BY BIOMEDICAL RESEARCH ETHICS COMMITTEE

BODY MASS INDEX

BUDGET

Item	Quantity	Unit Cost In ZK	Cost In ZK
Stationary			
1. A 4 Bond Paper	5 Units	28 000 per unit	140 000
2. Photocopying	100 questionnaires	10 000 per unit	1 000 000
3. Pens	10 units of 10	8 800 per unit	88 000
4. Flip Chart Paper	2 Rolls	95 000 per roll	180 000
5. Marker Pens	10 units of 10	30 000 per unit	300 000
6. Giant Stapler	1 units	60 000	60 000
7. Staples	10 units	15 000	15 000
Sub Total			**1 643 140**
Accessories			
8. Height measure	1	40 000	40 000
9. Scale	1	100 000	100 000
10. AAA Batteries	10 Units	100 000	100 000
11. BP automatic machine	1	300 000	300 000
Sub Total			**540 000**
Logistics			
12. Research assistants	2	300 000	600 000
13. Transport		1 000 000	1 000 000
14. Ethical fees	1	250 000	250 000
Sub Total			**1 850 000**
Grand Total			**4 033 140**

INFORMATION SHEET

INTRODUCTION

This consent form gives you information about this study. To have the facts about this study, you must read this form. If you agree to partic ate in this study, you should sign

this form. You will get a copy of this form to keep. Discuss any unclear section on this form with the project staff. If you feel that you do not want to take part, you are free to refuse your consent without any repercussions.

PURPOSE OF THE RESEARCH AND PROCEDURES

This study is being carried out by a student in the De artment of Community Medicine of the School of Medicine, University of Zambia. If you have questions about this study you can direct them to the Principle Investigator, UNZ linic, P.O Box 32379. Lusaka, Zambia. Mobile phone: 097-8367217.

You are being asked to take part in a research study, ch aims to determine the prevalence and factors associated with hypertension among full-time UNZA academic staff. This study will recruit only academic staffs who are full-time lecturers

After signing the informed consent you will be asked t undergo blood pressure measurement and complete a questionnaire. The process takes about 10 minutes.

RISKS AND DISCOMFORTS AND BENEFITS

There are no risks or discomforts that may arise from ing a study participant. Participants will benefit by knowing if they are hypertensive or not. Those found to have high blood pressure for the first time, two follow visits will be made for confirmation. If found to be hypertensive, they will b referred to UNZA clinic for appropriate management.

CONFIDENTIALITY Information about all participants will be kept as confidential and will not be made available to anyone who is not co ected with the study. No one in this study will be identified by name on the questionnaire. ***NOTE: The above section is to be detached and given to the participant***

INFORMED CONSENT FORM

By signing below I confirm that I understand participation in this research is entirely voluntary. The material in this consent has been expla ed to me, and my questions answered to my satisfaction. I freely and voluntarily choose to participate. I understand that I can withdraw from the study at any time without ny repercussions. I understand that my rights and privacy will be maintained.

I hereby give my consent to participate in the study.

…… **……..……**

Signature of participant **Date**

……..

Name of participant (BLOCK LETTERS)

…… **……**

Witness (Name and Signature) **Date**

PERMISSION LETTER FROM UNZA REGISTRAR

QUESTIONNAIRE

PART I: Interview Questionnaire for University of Zambia academic Staff Members (Lecturers)

Questionnaire Number.....

Recruitment Centre: UNZA School (cluster e.g Law, H.S.S, NS etc [ ]

Identification of the interviewer

Interviewer's number/name .....

Date of interview .....

Location of interview .....

Blood pressure:..... Height:..... Weight:.....

Now, I would like to ask you few questions about yourself. Please feel free to answer the questions. Your name will not appear on this paper. It is intended to improve the health facility of the University Of Zambia.

A. Background Information

QN	Code No
[1]. Age of Respondent.....	**[ ]**
Sex	**( )**
[2]. Marital status	
Married [ ]	
Single [ ]	
Divorced [ ]	**[ ]**
Widowed [ ]	
Separated [ ]	
Not applicable [ ]	
(Tick where appropriate)	

[3] When did you first become aware you were hypertensive?

Within the last year [ ]

1-5 yrs ago [ ]

6-10 years ago [ ]

11-15 yrs ago [ ] [ ]

16-20 yrs ago [ ]

More than 20 yrs ago [ ]

Not applicable [ ]

[4] (For female clients), did your hypertension manifest itself in or after pregnancy?

In pregnancy [ ]

After pregnancy [ ]

Not applicable [ ]

B. Service related

QN	Code No.

[5] When did you start taking medication for high blood pressure?

Within the last year [ ]

1-5 yrs ago [ ]

6-10 yrs ago [ ] [ ]

11-15 yrs ago [ ]

16-20 yrs ago [ ]

More than 20 yrs ago [ ]

Not applicable [ ]

(Please tick where applicable)

[6] How often do you take medication? (Tick all that apply)

Every day [ ]

Some days [ ]

When I feel unwell [ ] [ ]

When I remember [ ]

Whenever it is prescribed [ ]

Not applicable [ ]

(Tick where applicable)

[7] Have you ever suffered from any of the following? (Tick all that apply)

Stroke [ ]

Heart failure [ ]

Kidney failure [ ] [ ]

Very high blood pressure [ ]

Hospitalised for hypertension

Or related condition (If yes No of days…) [ ]

Not applicable [ ]

QN	Code No.

[8] Which health facility is your usual health care provider for common medical

conditions? (Tick only one)

UNZA Clinic [ ]

UTH [ ]

Private [ ] [ ]

Public [ ]

NGO [ ]

Other……. (Specify)..... [ ]

[9] Which health facility is your usual health care provider for hypertension? (Tick only one)

UNZA Clinic [ ]

Private [ ]

Public [ ] [ ]

NGO [ ]

Other…… (Specify)..... [ ]

(Tick where appropriate)

[10] Have you ever been referred (from the University Clinic) to another facility as a result of hypertension or related condition?

Yes [ ] No [ ]

Not applicable [ ] [ ]

[11] What is your level of satisfaction about services offered by UNZA Clinic in relation to hypertension? (Tick only one)

Satisfied [ ]

Very satisfied [ ]

Not satisfied [ ] [ ]

Completely unsatisfied [ ]

Not applicable [ ]

[12] What improvements would you like to be made regarding health services offered for hypertensive patients? Answer only if you are a UNZA clinic regular client. If not proceed to section C.

.....

.....

.....

.....

.....

.....

.....

C. Related to risk factors

[13] Does a week pass without doing any physical exercise?

Yes [ ] No [ ] [ ]

[14] Do you take alcohol?

Yes [ ] No [ ] [ ]

[15] Do you smoke cigarettes?

Yes	[ ]	No	[ ]	[ ]

QN. No.		Code
[16]	How many classes do you teach?	[ ]
[17]	In an ideal situation how many are you expected to teach?	[ ]
[18]	How often do you do office work at home in a week?	
	Once [ ]	
	Twice [ ]	[ ]
	Most of the time [ ]	
	The whole week [ ]	
	Others. (Specify)..... [ ]	

[19] Do you make sure you don't take a lot of salt?

Yes [ ]

No [ ] [ ]

Sometimes [ ]

I have never thought about it [ ]

[20] Do you think your meals are high fat content?

Yes [ ]

No [ ] [ ]

Sometimes [ ]

Others..... (Specify)..... [ ]

[21] Any additional comments?

.....

.....

.....

.....

.....

...

THANK YOU FOR YOUR TIME

Time line

Activity Year	2008	2009									2010	
Activity Month	December	April	May	June	July	August	September	October	November	December	January	March-April
Activity	Submission of proposal to Community Medicine department-School of Medicine-UNZA	Approval of proposal by the Community medicine Department-School of Medicine-UNZA	Submission of the proposal to the Ass. Dean PG School of medicine-UNZA	Presentation of the proposal at the Grand Graduate Forum	Approval of the proposal by School of Medicine-UNZA	Submission of the proposal to UNZA Biomedical Ethics Committee	Awaiting for Clearance/ Approval from UNZA Biomedical Ethics Committee	Clearance /approval from the UNZA Biomedical Ethics Committee	Data collection	Data collection	Data collection	Data Analysis And Report writing