HEALTHY LIFESTYLE-BEHAVIOUR OF HYPERTENSIVE PATIENTS AT PRIMARY HEALTH CARE (PHC) FACILITIES OF GREATER GIYANI SUBDISTRICT, MOPANI DISTRICT, LIMPOPO PROVINCE

by

AZWINDINI ZAIDA NDALANI

Submitted in accordance with the requirements for the degree of

MASTER OF PUBLIC HEALTH

at the

UNIVERSITY OF SOUTH AFRICA

SUPERVISOR: PROF P.R RISENGA

JANUARY 2022

DEDICATION

Firstly, I would like to dedicate this study to God the Almighty who gave me courage, strength, and wisdom to come up with this work, it was by His Grace. Secondly, this study is dedicated to my late sister, Ngobeni Sasekani Tiny. Dedication also goes to my son Hashanduki Khomunala for always being there for me. Your support made me to succeed in my studies. I love you all, may God bless you now and forever and give you long-lasting life.

STUDENT: 69752753

DECLARATION

I declare that **Healthy Lifestyle-Behaviour of Hypertensive Patients at Primary Health Care (PHC) Facilities of Greater Giyani Subdistrict, Mopani District, Limpopo Province** is my own work and that all the sources that I have used or quoted have been indicated and acknowledge by means of complete references and that this work has not been submitted before for any other degree at any other institution.

Ndalani Azwindini Zaida   31 October 2021
Full names   **Date**

ACKNOWLEDGEMENTS

I would like to thank:

- God the Almighty who gave me courage, strength, and wisdom to complete this mini-dissertation.

- My supervisor, PROF RISENGA P.R for dedicating her time and effort to the completion of my study. Her guidance and constructive feedback is highly appreciated.

- Department of Health of Mopani District, Greater Giyani Subdistrict for giving me permission to access the Health facilities.

- The PHC managers of the ten selected PHC for giving me permission to conduct my study.

- All hypertensive patients of the ten selected PHC who agreed to participate in the study. Their responses have enriched this Dissertation.

- Ndalani Thembuluwo for her support and brilliant ideas during data collection of this study to the end. I really enjoyed working with you in this project.

- My family for their love and support during my studies. Thank you very much and I love you unconditionally.

STUDENT NAME: NDALANI AZ.

STUDENT NO: 69752753

DEGREE: Master of Public Health

SUPERVISOR: PROF RISENGA P.R

ABSTRACT

BACKGROUND: Hypertension is a global health burden affecting developed and developing countries, including South Africa. Moreover, the high prevalence of hypertension worldwide contributes to the present and anticipated pandemic of CVD, which is of particular concern in developing countries.

PURPOSE: The purpose of the study was to determine healthy lifestyle-behavior of hypertensive patients at Primary Health Care facilities in Greater Giyani Subdistrict, Mopani District, Limpopo Province.

METHODOLOGY: Descriptive cross-sectional study was used with quantitative method. A total of 413 patients who were diagnosed of hypertension were randomly selected from the ten clinics of Greater Giyani Subdistrict in Limpopo Province. Data was collected using questionnaires and analysed using SPSS.

RESULTS: The overall participant rate in this study was satisfactory with 413 respondents being part of the study. Female respondents were at 77.88%, while male respondents were at 22.14%. Most of the respondents in this study were Tsonga speaking people at 78.38%, followed by Sepedi speaking people at 9.58% and at 7.37% were Venda speaking people. The findings of this study revealed that most of the respondents (91.39%) did not smoke cigarettes. Only 16.2% of the respondents reported that they engaged in vigorous-intensity activities. Regarding physical activities, 33.69% were overweight, followed by healthy weight at 32.35%, then 24.87% were obese and 9.09% were underweight. The findings also revealed that 52.65% of the respondents reported using bicycle or walking as part of exercising. It was revealed that 92.5% of the respondents eat breakfast every day, with 59% eating breakfast 4-7 times in a week, 31.8% eating breakfast 1-3 times a week, 9.2% never eat breakfast, and 69% of the respondents reported skipping meals. The patterns of these activities were discussed in relation to their implications to a healthy lifestyle among the hypertension patients.

CONCLUSION: Based on the findings of the study, the researcher has concluded that majority of respondents having hypertension did not consume alcohol and use tobacco.

Only a few of the hypertensive patients are involved in moderate intensity activity.

KEYWORDS: Healthy lifestyle behaviour, Hypertensive Patients, Primary Health Care facilities, Mopani District.

Table of Contents

ABBREVIATIONS

BMI	BODY MASS INDEX
CDC	CENTER FOR DISEASE CONTROL AND PREVENTION
CVD	CARDIOVASCULAR DISEASES
NCDS	NON-COMMUNICABLE DISEASES
PHC	PRIMARY HEALTHCARE
RSC	ROYAL SOCIETY OF CHEMISTRY
SAGE	SARA AND GEORGE PUBLICATIONS
SAJOG	SOUTH AFRICAN JOURNAL OF OBSTETRICS AND GYNECOLOGY
SAMJ	SOUTH AFRICAN MEDICAL JOURNAL
SPSS	STATISTICAL PACKAGE OF SOCIAL SCIENCE
UNISA	UNIVERSITY OF SOUTH AFRICA
WHO	WORLD HEALTH ORGANIZATION

LIST OF FIGURES PAGE

LIST OF TABLES **PAGE**

CHAPTER ONE

STUDY ORIENTATION

1.1 INTRODUCTION

In South Africa, the burden of non-communicable diseases (NCDs) has increased over the past 15 years causing an estimated 37% of mortalities and 16% of disability- adjusted life years (Motadi, Vedsman and Mabapa, 2017:2). Furthermore, Haque, Islam, Rahman, McKimm, Abdullah and Dhingra (2020:409) observed that NCDs are the leading cause of morbidity and mortality in most low and middle-income countries. NCDs such as cardiovascular diseases (CVD), cancer, chronic obstructive pulmonary disease and type 2 diabetes are linked to common and preventable biological risk factors, while high blood pressure, high blood cholesterol, high blood glucose and overweight are linked to related major behavioral risk factors such as unhealthy diet, physical inactivity, and tobacco use (Haque, et al, 2020:410).

Hypertension is a global health burden affecting developed and developing countries, including South Africa (Seedat and Rayner, 2012). Moreover, the high prevalence of hypertension worldwide contributes to the present and anticipated pandemic of CVD, which is of particular concern in developing countries (South Africa hypertension guideline 2011). According to Geldsetzer, Manne-Goehler, Marcus, Ebert, Zhumadilov, Wesseh, Tsabedze, Supiyev, Sturua, Bahendeka, and Sibai (2019:652), hypertension is estimated to affect about one billion people globally by 2030 and is a prominent factor in numerous cardiovascular diseases. Furthermore, cardiovascular diseases account for around 17 million fatalities worldwide, with complications from high blood pressure accounting for approximately 7,5 million deaths and 57 million disability-adjusted life years.

According to Poulter, Borghi, Parati, Pathak, Toli, Williams, and Schmieder (2020:579), hypertension is a chronic disease that demands a lifestyle modification as well as a daily intake of medication. Poor eating habits contribute to a decreased diet quality and a reduction in health outcomes. Poor eating habits include having an erratic meal schedule, skipping meals, drinking sugary drinks, frequently eating takeaways and eating high-fat foods (Oliveros, Patel, Kyung, Fugar, Goldberg, Madan and Williams, 2020:99).

1.2 BACKGROUND INFORMATION ABOUT THE RESEARCH PROBLEM

Hypertension is the greatest risk factor for cardiovascular diseases, which is responsible for up to 7 million deaths worldwide every year (SAJSM 2011:4). The center for disease control and prevention (CDC) indicates that 1 in 3 adults in America have hypertension and the same trend is found in South Africa, where 55% of adults who are 30 years of age and older have hypertension. Furthermore, it is estimated to affect about one billion people worldwide by 2030 and is a major risk factor for many cardiovascular diseases and is responsible for about 17 million deaths globally (Geldsetzer, et al, 2019:100).

According to Monakali, Goon, Seekoe and Owolabi (2018:1), hypertension is a leading preventable cause of morbidity and premature mortality. The Royal Society of Chemistry (RSC) predicts a rise in strokes and heart attacks in the coming years due to a considerable increase in hypertension during the last 10 years, as well as insufficient diagnosis and treatment of increased blood pressure. Uncontrolled stress and possibly genetically inherited makeup are the primary causes of stroke and heart attack; however, stress and genetic inherited makeup have no direct impact on blood pressure rise. As a result, it is apparent that hypertension is not caused by stress or genetic makeup. Furthermore, the researcher concluded from those two studies that hypertension is a severe threat to life, health, and development, and that this might be attributed to changes in lifestyle behavior and eating habits. As a result, the researcher assumes that hypertensive individuals do not practice good eating habits and lifestyle. It's no surprise that nutrition is becoming a more prominent modifiable predictor of chronic illnesses like hypertension, with scientific data increasingly supporting the notion that dietary changes have significant implications on health throughout life, both positively and adversely.

According to Oliveros, Patel, Kyung, Fugar, Goldberg, Madan, and Williams (2020:99), the prevalence of hypertension has been widely recorded in many parts of the world. However, accurate estimations of the worldwide prevalence of this condition are essential as a source of primary information and for rational planning of health services. For the 2019/2020 financial year, Mopani District and its 5 Subdistricts registered a total of 440 730 hypertensive patients (District health plan: 2020/2021). Greater Giyani has the most hypertension patients among the five subdistricts, with 86346 patients. The study therefore seeks to find out if the hypertensive patients that visit Greater Giyani PHC facilities adhere to healthy lifestyle-behavior.

1.3 STATEMENT OF THE RESEARCH PROBLEM

For the 2019/2020 financial year, Mopani District and its 5 Subdistricts registered a total of 440 730 hypertensive patients (District health plan: 2020/2021). Greater Giyani has the greatest number of hypertension patients (86346) among the five Subdistricts (District health plan: 2020/2021). The study therefore seeks to find out if the hypertensive patients that visit Greater Giyani PHC facilities adhere to healthy lifestyle-behavior. As a result, the researcher assumes that hypertensive individuals do not practice good eating habits and lifestyle.

1.4 RESEARCH PURPOSE

The purpose of the study was to determine healthy lifestyle-behavior of hypertensive patients at Primary Health Care facilities in Greater Giyani Subdistrict, Mopani District Limpopo Province.

1.5 RESEARCH OBJECTIVES

OBJECTIVES OF THE STUDY WERE TO:

- Determine the body mass index (BMI) of hypertensive patients.
- Assess dietary intake of hypertensive patients.
- Assess physical inactivity of hypertensive patients.
- Assess tobacco usage of hypertensive patients.
- Assess the alcohol consumption of hypertensive patients.

1.6 RESEARCH QUESTIONS

- What is the body mass index (BMI) of hypertensive patients at Primary Health Care facilities of Greater Giyani Subdistrict, Mopani District, Limpopo province?
- What is the dietary intake of hypertensive patients?
- What is the physical inactivity of hypertensive patients?
- What is the tobacco usage of hypertensive patients?
- What is the alcohol consumption of hypertensive patients?

1.7 SIGNIFICANCE OF THE STUDY

To provide the community with health education regarding lifestyle behaviour, to prevent the development of diseases of lifestyle and to improve the quality of life of people living with the diseases of lifestyle. Furthermore, to help fill the gaps in knowledge and change the way that healthcare professionals advocate for a healthy living lifestyle. Moreover, the information may also serve as a source of reference to other researchers who may be interested in research on the same or related topic.

1.8 DEFINITIONS OF KEYWORDS

Healthy lifestyle behaviour: Activities that promote healthy lifestyles among individuals are referred to as healthy lifestyle behavior (Barker, Dombrowski, Colbourn, Fall, Kriznik, Lawrence, Norris, Ngaiza, Patel, Skordis-Worrall, and Sniehotta, 2018:1853). Health lifestyle behaviours includes patterns of dietary intake, physical activities and/ or inactivity healthy recommendations on smoking and alcohol consumption. Healthy lifestyle behaviour contribute to the physical, mental and psychological welfare of the individuals concerned. This study will discuss the healthy lifestyle behaviour of hypertensive patients at Primary Health Care facilities in Greater Giyani Subdistrict, Mopani District, Limpopo Province. In this study, healthy lifestyle was discussed in terms of BMI index, eating habits, physical activity, smoking and alcohol consumption.

Hypertensive patient: Hypertension is a condition in which the blood pressure is excessively high (Patel, Lee, Mena-Hurtado and Walker, 2017:1). Hypertensive patients experience high blood pressure, which is likely to cause long-term force of blood against artery walls and may be sufficiently high to cause a variety of health problems (Patel, Lee, Mena-Hurtado and Walker, 2017). This study discussed the hypertensive patient in terms of maintaining healthy practices at Primary Health Care facilities in Greater Giyani Subdistrict, Mopani District, Limpopo Province.

Primary Health Care facilities: Primary Health Care facilities, such as general health practices, medical, medical physiotherapy, and dental clinics, are typically found in community settings (Barker, et al, 2018:1854). This study examined the healthy practices of hypertensive patients at a select Primary Health Care facilities in Mopani District, Limpopo Province.

1.9 RESEARCH PARADIGM

The research falls under the positivist paradigm. According to Park, Konge and Artino (2020:690), positivism paradigm is relevant in exploring the issues on social reality. The positivists believe that the best way to explain human behavior is by observation and reason. Knowledge is achieved by the use of the five senses in the positivist approach. Positivists hold the view that reality is objective and that it can be measured using attributes that are independent to the researcher. Positivists are interested in discovering the truth and communicating it through scientific evidence. The researcher in this study adopted the objectivist approach that is based on the belief that reality is objective and that reality is shaped by people's perceptions on what could be regarded as true, false, right, or wrong (Alharahsheh and Pius, 2020:39).

The researcher's role in the positivist paradigm is confined to data gathering and objective evaluation of that data (Park, et al, 2020:691). The study outcomes are observable and quantifiable under positivism. The researcher is highly independent from the research, thus being objective and prejudice free from the findings of the study (Park, et al, 2020:693). Science, according to positivism, is founded on empirical evidence gathered through direct observation (Alharahsheh and Pius, 2020:40). The aim of positivist research is to establish valid and reliable causal relationships in an objective way. Numbers are used to record facts so that they may be quantified and assessed through statistical data analysis (Park, et al, 2020:693). As a result, quantitative research was adopted for purpose of this study since it allows for quantification of data collection, presentation, and analysis. The quantitative research follows the descriptive cross-sectional design in describing the healthy lifestyle-behavior of patients diagnosed with hypertension in Greater Giyani PHC facilities.

1.10 RESEARCH METHODOLOGY AND RESEARCH DESIGN

The quantitative approach was chosen because the researcher aimed to describe the healthy lifestyle-behaviour of hypertensive patients at Primary Health Care facilities of Greater Giyani Subdistrict Mopani district Limpopo province. The research design was quantitative; it was based on the study's quantitative measurements and was applicable to phenomena that could be described in terms of numbers (Rahi, 2017:1). A descriptive cross-sectional design was adopted in this study. A descriptive cross-sectional study is used to describe the characteristics of the population or issue under investigation (Rahi, 2017:2). This study describes healthy lifestyle-behaviour of hypertensive patients.

Detailed information related to design and methods have been presented in detail in chapter three of this study.

1.11 SCOPE OF THE STUDY

Since Greater Giyani Subdistrict is a large Subdistrict with many Primary Health Care facilities, and due to limited resources, such as manpower, equipment, and the COVID-19 pandemic, only a few Primary Health Care facilities within the selected Subdistrict were considered. In addition, a small sample was used for the study, which may not accurately reflect the distribution of healthy lifestyle behavior of hypertensive patients in Greater Giyani Subdistrict. The findings were generalized in the population from which the sample was taken.

The availability of patients to complete questionnaires and sign consent forms at clinics may be a challenge; as a result, some patients will be visited in their homes if necessary, and some questionnaires will be sent to patients via community health care workers and returned to the researcher. All hypertensive patients (male and female) who are registered with a Primary Health Care facility in the greater Giyani Subdistrict and have completed the consent forms and questionnaires will be included in the study.

1.12 STRUCTURE OF THE DISSERTATION

The thesis was divided into the following chapters:

Chapter 1: Orientation of the study

Chapter 2: Literature Review of the study

Chapter 3: Research Method and Design

Chapter 4: Analysis, presentation and description of the research findings

Chapter 5: Summary of the research findings, recommendations, limitations and conclusion

1.13 CONCLUSION

This chapter presented the orientation to the study. The chapter incorporated an introduction to the study, background information for the research problem, research problem, research purpose, research objectives, and significance of the study, definition

of key terms, research design and method. The next chapter will review the literature relevant to the study topic. The literature review focused on dietary intake and hypertension, physical inactivity and hypertension and tobacco use and hypertension.

CHAPTER TWO

LITERATURE REVIEW

2.1 INTRODUCTION

Hypertension is defined as systolic blood pressure equal to or above 140 mmHg or/and diastolic blood pressure equal to or above 90 mmHg, which is associated with increased risk of heart disease, stroke, kidney failure, premature mortality, and disability (Gerardo et al., 2015:1). Furthermore, Gerardo et al (2015:1) revealed that nearly 40% of adults over the age of 25 were diagnosed with hypertension in 2008 worldwide. Seedat et al (2014:288) defined hypertension as a sustained increase in office blood pressure (BP) of 140/90mmHg. Hypertension is one of the most common chronic diseases in the world and generally recognized as a major risk factor for myocardial infarction, stroke, heart failure, and renal failure (Kakamu et al., 2019:1). Hypertension is the most prevalent chronic disease affecting more than 30% of adults aged 25 years globally (Lelong, Blacher, Baudry, Adriouch, Galan, Fezeu, Hercberg, and Kesse-Guyot, 2017:712).

Furthermore, its prevalence is still rising, making it the leading cause of global morbidity and mortality (Gerardo et al., 2015:1). The rising prevalence of hypertension is linked to population aging, excess weight, and persistent stress on an individual level (Gerardo et al., 2015:1). According to research done in Japan, approximately 10 million individuals have hypertension which together with associated disorders, account for a significant amount of medical expenditure (Kakamu et al., 2019:1). In South Africa the burden of non-communicable diseases (NCDs) has increased over the past 15 years causing an estimated 37% of mortalities and 16% of disability-adjusted life years (Motadi et al., 2017:212).

According to Bhelkar (2018:431), cardiovascular diseases are the leading cause of mortality among noncommunicable diseases, accounting for 17 million deaths worldwide each year. Hypertension-related complications account for more than 9 million of these deaths. Furthermore, epidemics of cardiovascular diseases, particularly hypertension, are driven by demographic and socioeconomic changes that that influence living, eating, and working habits of the population. As a result of these changes, significant risk factors for hypertension such as mental stress (psychosocial stress), tobacco use, physical inactivity, obesity, and an unhealthy dietary pattern have increased across the population.

According to Lelong et al (2019:713), the most important modifiable risk factors for hypertension include obesity, unhealthy eating habits (particularly excessive salt intake), alcohol use, and a lack of physical exercise. Unhealthy diets, including excessive consumption of calories, salt, saturated fat, and sugar, are responsible for 40% of NCD deaths (Kassa and Grace, 2019:1). Up to 80% of heart disease, stroke, type 2 diabetes, and cancers might be avoided if common risk factors such as tobacco use, unhealthy diet, physical inactivity, and harmful alcohol consumption were eliminated (Kassa and Grace, 2019:1).

2.2 DIETARY INTAKE AND HYPERTENSION

Diet is one of the key modifiable risk factors in the development of hypertension (Godos, Vitale, Micek, Ray, Martini, Del Rio, Riccardi, Galvano, and Grosso, 2019:152). Moreover, the increased rates of hypertension and other chronic diseases in developing countries have been attributed to the nutrition transition and global shifts in food consumption patterns. One of the components of a healthy diet is the consumption of fruits and vegetables. Globally, inadequate consumption of fruits and vegetables is responsible for roughly 14% of deaths from gastrointestinal cancer and 10% of deaths from ischemic heart disease and stroke (Godos et al, 2019:153). Moreover, the research that was done in western countries to examine the relationship between dietary patterns and risk of hypertension using dietary pattern analysis in western countries revealed that dietary patterns high in red and processed meats, fast food, fatty food and sweet dessert can lead to an increase in blood pressure, whereas a dietary pattern that is high in vegetables, whole grains, fruits, lean meat, fish and reduced high fat dairy products is inversely related to hypertension and decreased blood pressure among subjects (Godos, et al, 2019:154).

Regular consumption of sugary drinks, processed meats, deep-fried foods and other fatty, sugary, and salty foods is associated with NCDs (Grillo, Salvi, Coruzzi, Salvi and Parati, 2019:1970). There is compelling evidence that consuming a lot of high-energy foods, such as processed foods high in fats and sugars, increases obesity when compared to consuming a lot of low-energy foods like fruits and vegetables (Grillo et al, 2019:1970). Heart disease is linked to a diet high in saturated fats and trans-fatty acids. Diet which has a high content in fats, free sugar and salt and physical inactivity are among some of the leading causes of NCDs, including CVD, type 2 diabetes, and certain cancer (Mills, Stefanescu and He, 2020:223). Furthermore, NCDs cause at least 14 million deaths per

year due to the consumption of foods high in saturated and industrially produced trans fats, salt and sugar (Mills, et al, 2020:223). Shimbo, Barrett Bowling, Levitan, Deng, Sim, Huang, Reynolds, and Muntner (2016:222) found that while adopting a healthy diet and lifestyle is important for preventing hypertension in people who do not have it, it is also an important component of hypertension management and plays a key role in improving blood pressure control in patients who do have it. Furthermore, for patients with hypertension, dietary and lifestyle intervention are commonly recommended as an initial strategy to control blood pressure and improve the cardiovascular risk profile.

Obesity, diabetes, cardiovascular disease, and cancer are all reduced by following a plant-based diet. These diets are high in fruits and vegetables, whole grains, pulses, nuts, and seeds, and they assist in maintaining healthy weight. They are also high in dietary fiber, which protects against colorectal cancer and other NCDs (Mills, et al, 2020:224). Most South Africans consume a Western diet that is high in calories, fat, animal protein, and sugar, but low in unrefined carbohydrates and fiber, fruits and vegetables, and salt (Chan, Aufreiter, O'Keefe, and O'Connor, 2019). Increases in behavioral risk factors, on the other hand, contribute to an increase in noncommunicable diseases. According to Mills, Stefanescu, and He (2020:224), H high blood pressure can be controlled by reducing dietary salt, eating a balanced diet low in saturated fat and high in fruits and vegetables, limiting alcohol consumption to 14 drinks per week in men and 9 drinks per week in women, engaging in 30 to 60 minutes of aerobic exercise four to seven days per week, and maintaining a healthy body weight (BMI 18,5 to 24,9 kgm2 and waist circumference <102cm for men and <88cm for women).

Poor dietary quality (high salt intake, high saturated and trans fatty acid intake, low fruit and vegetable consumption) is a major risk factor for NCDs and mortality across the world, and it is one of the top priorities for international action (Mills, et al, 2020:225). Red meat and highly processed meats, such as smoked, salted, or added preservatives, are strongly linked to an elevated risk of NCDs, including cardiovascular disease (CVD) and various cancers. Saturated and trans fats increase blood cholesterol and put you at risk of cardiovascular disease (WHO, 2017:11). One of the major modifiable risk factors for NCD morbidity and mortality, including cardiovascular diseases, type 2 diabetes, and cancer, is unhealthy eating. Consumption of fruits and vegetables is one of the elements of a healthy diet. Inadequate consumption of fruits and vegetables is responsible for

roughly 14% of deaths from gastrointestinal cancer and 10% of deaths from ischemic heart disease and stroke worldwide (WHO, 2017:2).

Tarcea, Fazakas, Szucs, Kovacs, Nagy, Olah and Tilinca (2017:2083) recommend that an individual must consume a minimum of 400 grams of fruits and vegetables per day excluding potatoes and other starchy tubers for the prevention of chronic diseases such as heart diseases, cancer, diabetes and obesity. Heart disease is linked to a diet high in saturated fats and trans-fatty acids. Consumption of a high-salt diet raises blood pressure and raises the risk of heart disease and stroke (Tarcea, et al, 2017:2084). To reduce the risk, the recommended daily intake of sodium is less than 2 grams or 5 grams of salt. The global NCD targets include a sodium reduction target of a 30% relative reduction in mean population salt intake by 2025 (Santos, Tekle, Rosewarne, Flexner, Cobb, Al-Jawaldeh, Kim, Breda, Whiting, Campbell and Neal, 2021: 1768).

2.3 PHYSICAL INACTIVITY AND HYPERTENSION

Physical activity is defined as any skeletal movement that results in an energy expenditure (Chinwong, Mookmanee, Chongpornchai and Chinwong, 2018: 2). Furthermore, there are several sorts of physical activities, which are generally classed based on their influence on the subject's heart rate and the amount of effort required. Moreover, strong intensity activities include activities that demand a lot of physical effort and induce a considerable rise in respiration or heart rate, such as running and football. Brisk walking and swimming, for example, are moderate intensity activities since they demand moderate effort and generate a minor rise in respiration or heart rate. It has been scientifically proven that regular physical activity among all age groups has physical and mental benefits (Tarcea, *et al,* 2017:2084). Ahmed et al., 2016).

Physical inactivity is a form of sedentary behavior that involves activities like watching television, playing video games, and not engaging in at least one hour of physical exercise every day (Swaminathan, 2013). Furthermore, Van der Ploeg and Hillsdon (2017:1) defined physical inactivity as an inadequate amount of exercise to satisfy the existing standards. Insufficient time, injuries, obesity, lack of support from family and friends, and environmental factors such as hot weather and lack of amenities such as adequate walking or jogging places have all been investigated and reported as predictors of inactivity (van der Ploeg and Hillsdon, 2017:1). Furthermore, environmental factors such

as hot weather and a lack of adequate working or running facilities might have an impact on physical activity levels (van der Ploeg and Hillsdon, 2017:8).

Physical inactivity is one of the most major risk factors for acquiring chronic illnesses and increasing morbidity and mortality, and it has been linked to a significant number of early deaths globally in recent decades (Chinwong, Mookmanee, Chongpornchai and Chinwong, 2018: 2). In addition, inadequate physical activity has been linked to global mortality risk factors and is on the rise in many countries, contributing to the burden of NCDS and impacting global health (WHO, 2017:15). According to other studies, physical inactivity causes 6-10% of the major non-communicable diseases such as coronary heart disease, type 2 diabetes, and breast and colon cancer worldwide (Lee et al., 2012). When compared to those who engage in at least 30 minutes of moderate intensity physical activity on most days of the week, those who are insufficiently active have a 20% to 30% higher risk of death (WHO, 2018:20).

Despite evidence of the health advantages associated with regular physical activity, an increase in the incidence of physically inactivity has been identified as a global public health priority (Onagbiye et al., 2019:558). Furthermore, in 2016, globally, 28% of all adults aged 18 and above were inadequately physically active, defined as failing to achieve the WHO recommendation of 150 minutes of moderate-intensity physical exercise per week, or the equivalent (Guthold et al.2018:1077-1086). Physical inactivity is linked to around 21-25% of breast and colon cancer cases, 27% of diabetes cases, and 30% of ischemic heart disease cases. Physical activity lowers the risk of cardiovascular disorders such as hypertension, diabetes, and depression. Insufficient activity is most prevalent in high-income countries, although it is also prevalent in some middle-income countries, particularly among women (WHO, 2016:5).

Physical inactivity is a major risk factor for noncommunicable diseases such as stroke, diabetes, and cancer. Many countries are experiencing a decrease in physical activity, with 23% of adults and 81% of school going adolescents in the world being insufficiently active. Approximately 31% of the world's population is insufficiently active (WHO, 2017:1). As a result, insufficient physical activity causes nearly 3.2 million and 32.1 million deaths each year. Physical inactivity is estimated to affect 52% of South African adults, with 38% of South African youth engaging in less than the recommended amount of physical activity (30-40 minutes per day), (WHO, 2017:2).

2.4 TOBACCO USE AND HYPERTENSION

Cigarette smoking is a major preventable cause of morbidity and mortality worldwide (Hatcher, Gibbs, McBride, Rebombo, Khumalo, and Christofides, 2019: 112637). Every year, it is estimated that more than 5 million people die from tobacco-related illnesses around the world. Furthermore, 20.5% of all adults in the United States are current smokers, and smoking is responsible for one out of every five deaths. Hypertension and cigarette smoking are leading causes of cardiovascular diseases such as atherosclerosis, stroke, and coronary heart disease. Nicotine, the addictive ingredient in cigarettes, acts as an adrenergic agonist, increasing heart rate and blood pressure by stimulating catecholamine and vasopressin release. As a result, smokers typically have higher blood pressure than non-smokers (Jinok et al 2018:202).

Tobacco use has been linked to an increased risk of death, with cardiovascular diseases such as stroke and heart attack accounting for majority of the deaths (Jinok, et al, 2018:202). This is closely followed by chronic lung diseases such as chronic bronchitis, emphysema, and lung cancer. According to Leone (2015:1), cardiovascular risk factors have a considerable impact on the rate and characteristics of several cardiovascular diseases, particularly coronary and cerebrovascular disease. Furthermore, cigarette smoking, and hypertension have been extensively studied in relation to their association with the heart and blood vessels in an attempt to determine their efficiency in impairing both clinical outcomes (Leone, 2015:1).

Important modifiable risk factors for the development of hypertension are smoking habits and physical activity. Physical activity has a protective impact on hypertension, Diana et al (2018:58). Cigarette smoking, on the other hand, raises systolic blood pressure and heart rate. Furthermore, tobacco use has been linked to premature death and cardiovascular disease in users (WHO, 2017:18) Cigarette smoking is the leading cause of cardiovascular events, as well as the development and progression of chronic kidney disease, Hieshima et al (2018:478). Smoking can increase the risk of incident hypertension and myocardial infarction, as chronic diseases like hypertension and myocardial infarction can shorten life expectancy and have a negative impact on the quality of life. Furthermore, cigarette smoking is one of the leading preventable causes of hypertension and myocardial infarction, implying that quitting of smoking could significantly reduce the risk of these diseases, Gao et al (2017:1).

2.5 ALCOHOL CONSUMPTION AND HYPERTENSION

High alcohol consumption has an unintentional impact on the burden of NCDs such as cancer, hypertension, schematic heart diseases, stroke, and liver cirrhosis, and they go on to say that attention has recently shifted to understanding the impact of specific drinking patterns on the health outcomes mentioned above, for example, moderate alcohol consumption may protect against schematic heart diseases while heavy consumption may increase the disease's risk (Zhao, Liu, Li, Feng, Chang and Lyu, 2020:83). Approximately 2.3 million people die each year from the harmful use of alcohol, accounting for about 3.8% of all deaths worldwide, with half of these deaths due to NCDs. The relationship between high levels of alcohol consumption and the rise of diseases such as cancer, liver disease, and cardiovascular disease is complex, depending on both the amount and the pattern of alcohol consumption (Olawuyi and Adeoye, 2018:2).

According to Olawuyi and Adeoye (2018:2), 2.7 million people died worldwide in 2010 as a result of alcohol consumption, and that this had an impact on the burden of non-communicable diseases such as cancer, hypertension, ischemic heart disease, and many others. Alcohol consumption has an impact on people and societies, and it is determined by the amount of alcohol consumed, the pattern of drinking, and the quality of alcohol consumed. According to the study, alcohol consumption is a risk factor for more than 200 diseases, as well as major non-communicable diseases and injuries (WHO, 2017:72).

Over time, heavy drinking can damage the liver, heart, and brain (Zhao, Liu, Li, Feng, Chang and Lyu, 2020:83). Alcohol can increase the risk of certain cancers and immune system disorders, as well as damage muscles and bones. Around 11.5% of people in the world are heavy drinkers, with males drinking more than two drinks per day and women drinking more than one. In 2004, 2.3 million people died as a result of dangerous and deadly drinking around the world. NCDs, cancers, cardiovascular disease, and liver cirrhosis caused the majority of these deaths (Furman, Campisi, Verdin, Carrera-Bastos, Targ, Franceschi, Ferrucci, Gilroy, Fasano, Miller and Miller, 2019: 1822). In South Africa, 16% of men report hazardous harmful alcohol use, with an increase in the last ten years, and limited policy actions have not yet resulted in any improvement, implying that comprehensive alcohol strategies, including restrictions, advertising, and decreasing availability, are required (Hatcher, Gibbs, McBride, Rebombo, Khumalo and Christofides, 2019: 112637).

2.6 CONCLUSION

This chapter delt with the literature review on the research topic and discussed the impact of dietary intake and hypertension, the impact of alcohol consumption and hypertension the impact of tobacco usage and hypertension the impact of physical inactive and hypertension. The next chapter explains the research design, research methods, data management, and ethical considerations undertaken during the study.

CHAPTER THREE

RESEARCH DESIGN AND METHODOLOGY

3.1 INTRODUCTION

This chapter explains the research design, research methods, data management, measures of ensuring trustworthiness and ethical considerations undertaken during the study.

3.2 RESEARCH DESIGN

Dannels (2018:402) describe the research design as a blueprint, or outline, for conducting the study in such a way that maximum control will be exercised over factors that could interfere with the validity of the research results. The research design is the researcher's overall plan for obtaining answers to the research questions guiding the study. Dannels (2018:402) state that designing a study helps researchers to plan and implement the study in a way that will help them obtain the intended results, thus increasing the chances of obtaining information that could be associated with the real situation. The study used descriptive cross-sectional design. Descriptive cross- sectional study is used to describe characteristics of a population or phenomenon being studied (Dannels, 2018:403). This study describes the healthy lifestyle-behaviour of hypertensive patients through quantifying the information obtained after data collection. Hence, this study followed the descriptive research design.

3.2.1 QUANTITATIVE RESEARCH

This study attempted to quantify healthy lifestyle-behaviour of hypertensive patients in Mopani area. Quantitative data can be transposed into numbers, in a formal, objective, systematic process to obtain information and describe variables and their relationships (Dannels, 2018:402).

3.2.1.1 Characteristics of quantitative research

Quantitative research entails that there is a single reality that can be defined by careful measurement. It is usually concise. It describes, examines relationships, and determines causality among variables, where possible. Statistical analysis is conducted to reduce and organise data, determine significant relationships and identify differences and/or

similarities within and between different categories of data. The sample should be representative of a large population. Reliability and validity of the instruments are crucial (Schoonenboom and Johnson, 2017:107). Comprehensive data collected by employing different methods and/or instruments should result in a complete description of the variable or the population studied. It provides an accurate account of characteristics of particular individuals, situations, or groups.

3.2.1.2 Descriptive cross-sectional study

A descriptive cross-sectional study is a study in which the disease or condition and potentially related factors are measured at a specific point in time for a defined population. This type of data can be used to assess the prevalence of conditions in a population. Descriptive research provides an accurate account of characteristics of a particular individual, event or group in real-life situations (Schoonenboom and Johnson, 2017:108). A descriptive design may be used for the purpose of developing theory, identifying problems with current practice, justifying current practice, making judgements, or determining what others in similar situations are doing (Schoonenboom and Johnson, 2017:107). The purpose of a descriptive design is to provide the perceptions and views of the respondents about the phenomenon studied (Dannels, 2018:402). This study attempted to identify and describe healthy lifestyle-behaviour of hypertensive patients.

The cross-sectional study design is useful when answering questions about the incidence or prevalence of a condition, belief, or situation. It is also useful when attempting to establish what is referred to as the norm for a specific demographic at a specific time or justifying further research on a specific topic. The cross-sectional studies can infer a relationship or correlation but are not always sufficient to determine a direct cause (Du Plooy-Cilliers, Davis and Bezuidenhout, 2014:149). A cross-sectional study provides an overall picture of a phenomenon at one point in time (Du Plooy-Cilliers, et al, 2014:149).

3.3 RESEARCH SETTING

The research setting refers to the specific place or places where data is collected (Brink, van der Walt & van Rensburg 2012:59). Data will be collected at Mopani district in Limpopo Province of South Africa. Mopani District is divided into five Subdistricts namely: Ba-Phalaborwa, Greater Giyani, Greater Letaba, Greater Tzaneen and Maruleng Sub-District. The study was conducted in Greater Giyani Subdistrict Primary Health Care

facilities. The total population in Greater Giyani is 10864. There are 28 Primary Health Care facilities divided in terms of four (04) local areas.

Figure 3.1: Study Map

3.3.1 RESEARCH METHODS

The quantitative researcher aimed at describing healthy lifestyle-behaviour of hypertensive patients at Primary Health Care facilities of Greater Giyani Subdistrict, Mopani District, Limpopo province. The study design was quantitative; it was based on the study's quantitative measurements and was applicable to phenomena that could be described in terms of quantities (Kumar, 2017). The methods used in the study have been presented underneath from the population, sampling technique, data collection procedure, presentation and analysis, validity and reliability and ethical guidelines.

3.3.2 POPULATION

The population refers to the entire group of persons or objects that are of interest to the researcher (Brink, Van der Walt & van Rensburg 2012:131). The population of the study were all patients diagnosed with hypertension at Primary Health Care facilities in Greater Giyani Subdistrict, Mopani district, Limpopo Province.

3.3.3 SAMPLING

3.3.3.1 Sampling site

Mopani District comprises of 5 Subdistricts: Ba-Phalaborwa, Greater Giyani, Greater Letaba, Greater Tzaneen and Maruleng Subdistrict. Simple random sampling was used to select one Subdistrict. Simple random sample means that every member of the population has an equal chance of being selected (Leedy and Ormrod, 2010:201). The researcher assigned numbers to the Subdistricts, cut it into small strips and place them in a container. A District Executive Manager was requested to pick one strip from a container in the presence of the researcher. The Greater Giyani Subdistrict was then selected. It consists of 4 local areas, which has the total number of 86346 patients diagnosed with hypertension. Local areas within the selected Subdistrict will form part of the study.

3.3.3.2 Participant sampling

Convenience sampling was used to select study respondents. Convenience (also known as available sample) is a specific type of non-probability sampling method that relies on data collection from population members who are conveniently available to participate in a study (Sanders et al.,2012). The sample was drawn from respondents who were conveniently available to participate in the study. The researcher visited the PHC facilities on Wednesdays which are the dates that are booked for chronic patients. The researcher requested for records of patients diagnosed with hypertension. Individual patients were requested to participate voluntarily in the study and will have to sign a consent form if they were willing to participate.

3.3.3.3 Sample and sample size

A sample refers to the people (respondents) that the researcher could gain access to within the identified population (Du Plooy-Cilliers, et al, 2014). Sampling is a process of extracting a sample from a population (Alvi, 2016). The Slovin's formula for sampling was used to calculate the total sample size.

Slovin's formula $n=N/(1+Ne^2)$

n= number of samples N= total population

e= error tolerance $n=N/(1+Ne^2)$

Total sample size was calculated from the total number of patients diagnosed with hypertension in Greater Giyani Subdistrict Primary Health Care facilities.

$n=N/\qquad (1+Ne^2)$
n=86346/
(1+86346*0.05*0.05)
n=398

3.4 INCLUSION CRITERIA

The inclusion criteria identifies the study population in a consistent, reliable, uniform and objective manner (Garg 2016:640). The researcher highlighted the importance of demarcating who would be part of the study. Accordingly, the following points were used to aid in the sampling of an appropriate sample:

- Hypertensive male and female between the ages of 18 years and above
- Hypertensive respondents who were obtained from the clinic
- Hypertensive patients who agreed to participate and signed consent and assent forms

3.5 EXCLUSION CRITERIA

Exclusion criteria includes factors or characteristics that make the recruited population ineligible for the study (Garg, 2016: 640). The following hypertensive patients were excluded from the study:

- Hypertensive people who were less than 18 years of age

- Hypertensive patients who did not agree to participate in the research study

- Respondents who were not registered with the clinic

3.6 DATA COLLECTION

Data refers to the information that is obtained during the course of an investigation. This study employed the use of questionnaires to answer the research set objectives and questions. The purpose of this study was to determine healthy lifestyle-behavior of hypertensive patients at Primary Health Care facilities in Greater Giyani Subdistrict, Mopani District, Limpopo Province. Healthy lifestyle included BMI index, eating habits, physical activity, smoking and alcohol consumption. Convenience sampling was used to select the respondents for this study and collecting data from them. The data was collected from the respondents after the respondents were provided with the informed consent containing the information about the study and inviting the respondents to sign the consent form voluntarily to participate in the study. The researcher handed out the questionnaires to the respondents and collected them immediately after the respondents completed them. The completed questionnaires were sent to the statistician for analysis.

3.6.1 DATA COLLECTION INSTRUMENT

Data collection instrument refers to the tool(s) used to collect data (Rahi, 2017). This research used the questionnaire data collection tool. The questionnaire is defined as the method of gathering data from respondents regarding their attitudes, knowledge, beliefs and feelings about a phenomenon. The questionnaire in this research was carefully designed to gather the data about the healthy lifestyle-behavior of hypertensive patients at the selected Primary Health Care facilities.

3.6.1.1 Characteristics of a questionnaire

The questionnaire had different characteristics such as the respondents enter their individual responses on the questionnaire. The researcher does not need to compare the responses from the respondents during the process of collecting data. The questionnaire is less expensive to use, and a huge amount of data could be collected from the respondents at a time. The use of questions in a questionnaire allows for the researcher to guide the respondents in providing relevant data that answers the objectives and

questions set for the study. The respondents remain anonymous in providing the data. The use of the questionnaire in this study was useful in gathering ample data about the healthy lifestyle-behavior of hypertensive patients at the selected Primary Health Care facilities.

3.6.1.2 Development of the questionnaire

The questionnaire in this study was developed after a thorough literature review on healthy lifestyle-behavior of hypertensive patients from different settings. The literature indicated that maintaining a healthy lifestyle behavior is difficult among patients in general, especially those put under prescriptions based on their health conditions. The data collected was presented and discussed in chapter 4 following the format of the sections designed during data collection. The development of the questionnaire was done in reference to what the previous studies have identified and how the data was gathered. The researcher was assisted by the supervisor, the statistician, and the prospective respondents through questionnaire pilot study. Changes that were suggested from these prospective respondents, the statistician and the supervisor were integrated into the study by the researcher. The questionnaire was typed in English and the researcher ensured that she explains to the respondents where they could not understand. The misunderstandings that arise from the pilot study were corrected and questions that seem to have difficulties in understanding were corrected to remove the misunderstanding that might be caused.

3.6.1.3 Structure of the questionnaire

The questionnaire consisted of five structures: Section A – Socio-demographic information; Section B – Alcohol consumption; Section C – Tobacco use; Section D – Physical activity level; and Section E – Dietary intake. The questions in the questionnaire were comprising both close-ended questions and open-ended questions. This was done to gain a deeper understanding about the healthy lifestyle-behavior of hypertensive patients at the selected Primary Health Care facilities.

3.6.1.4 WEIGHT

Weight was measured using a seca solar scale model 0123. The scale was firstly calibrated before taking measurements. The respondents were weighed without shoes and wearing light clothes. Respondents were asked to stand still in the middle of the platform of the scale without touching anything. Body weights were equally

distributed on both feet. Weight was taken and recorded to the nearest 0.1 kg.

3.6.1.5 HEIGHT

Height was measured using a stadiometer (Seca model 0123). The respondents were barefooted, standing with heels closed together, arms aside, legs straight ahead and knees closed together, looking straight ahead, and wearing minimal clothing, shoulder relaxed and looking straight ahead. Heels, buttocks, scapular (shoulder blade) and back of the head were against the vertical surface in a Frankfurt position (Baharudin, Ahmad, Naidu, Hamzah, Zaki, Zainuddin and Nor, 2017:675). Height was recorded in centimeters to the nearest 0.1cm.

3.6.1.6 DIETARY INTAKE ASSESSMENT

Food frequency questionnaires were used to collect the information on frequency of food consumption. Dietary intake was assessed using a food finder.

3.6.1.7 ALCOHOL CONSUMPTION AND TOBACCO USE

To assess the intake of alcohol, a questionnaire was used to collect the information on alcohol and tobacco use.

3.6.2 PILOT STUDY

The pilot study was done to check the feasibility of the study. Pilot study is a small version, or trial done in preparation for a major study. Pilot study is a process in which a new measurement is developed to test out before administered to the actual sample (Government of Canada, 2016).Moreover it was stated that pilot study is the process of testing out a new measurement instrument development before administrating it to the actual sample (Welman *et al.,* 2005). Pilot study helps to obtain information for improving the questionnaire. Ten hypertensive patients were selected from one of ten Primary Health Care facilities for the purpose of piloting. The questionnaire was piloted and pre-tested to ten hypertensive patients on 12 of June 2021.Those hypertensive patients were excluded during the actual study. The information obtained did not form part of the final study. Pre-test of instrument was done during piloting to assist the researcher to determine the strengths and weaknesses of the questionnaire with regards to question format, wording and sequence (Welman *et al.*, 2005:148). The information was to help

the researcher to modify and restructure the questionnaire. However no changes were made.

3.7 VALIDITY AND RELIABILITY

Validity and reliability were employed in this study to ensure the research process and the data collection was credible and reliable.

3.7.1 VALIDITY OF THE RESEARCH INSTRUMENT

Validity refers to the degree to which an instrument measures what it was supposed to measure. There is external validity and internal validity (Mohajan, 2017:59).

3.7.1.1 External validity

External validity refers to the extent to which the results can be generalised to the larger population beyond the confinements of the sample used in the research (Brink, 2016:178). To achieve external validity, the size and relevance of the sample is key to ensure a sufficient richness of the data collected. The category of the sample population in this study fits well to achieve external validity of the findings. However, the external validity in this study was somehow compromised through the use of convenience sampling to the healthy lifestyle-behavior of hypertensive patients who happen to be at the right time and being accessible by the researcher at the time of the study data collection. There was no guarantee that the respondents who happened to be accessible during the time of data collection by the researcher had accurate information and knowledgeable enough about the healthy lifestyle-behavior of hypertensive patients.

3.7.1.2 Internal validity

Internal validity is the extent to which factors and issues involved and discussed in the measurement instrument are a true reflection of reality (Mohajan, 2017:60).

3.7.1.3 Face validity

Face validity refer to an indicator that makes it seem and appear reasonable to measure some variables (Connell, Carlton, Grundy, Buck, Keetharuth, Ricketts, Barkham, Robotham, Rose and Brazier, 2018:1893). It is the subjective judgement that the instrument used measures what it intends to measure. Through the pilot study and the assistant of the supervisor and the statistician who are experts in the field, the difficulties

in understanding the questions in the questionnaire was removed by a careful selection of words to foster clarity and understanding.

3.7.1.4 Content validity

Content validity refers to the assessment of how well the instrument represents all the components of the variable to be measured (Mohajan, 2017:59). The questionnaire in this study was constructed after a thorough literature review to identify the relevant concepts and issues that are relevant to inform of the objectives of the study. A thorough literature review was vital to ensure that the content of the questionnaire reflects on the reality of the healthy lifestyle of hypertension patients that was measured. The content of the questions in the questionnaire was crafted with the guidance of the experts (the supervisor and the Higher degrees committee avaluations and recommendations) in the field to ensure that the questions are polished to inform of the ojectives and questions set for this study.

3.7.2 RELIABILITY OF THE RESEARCH INSTRUMENT

Reliability refers to the degree of accuracy and consistency with the instrument in measuring what it is designed to measure. Reliability refers to the study being able to be replicated and the same results could be obtained using the same methods of data collection and analysis from the initial study. This study conducted the pilot study to finetune the questionnaire in ensuring that the instrument will collect the data that informs of the objectives and questions set for the study. The Cronbach's alpha is a tool used to measure internal consistency such as measuring how closely related a set of items (questions in a questionnaire) are as a group. Reliability coefficient of 0.70 and above is considered acceptable when considering reliability of the data. Reliability was also enhanced with the assistance of the statistician to assist with the analysis of the data in identifying the relationship of the variables with reliability coefficients found for most of the items.

3.8 DATA COLLECTION APPROACH AND METHODS

The researcher must carefully consider exactly what type of information is needed to answer the research question (Brink, 2016:134). In the study, the researcher visited the ten Primary Health Care and requested permission from PHC managers to conduct the study. The manager introduced the researcher to the nursing staff and arranged on how to get respondents without disturbing the rendering of services to the patients, as

indicated on the permission letter from the Department of health that services should not be disturbed. The researcher obtained permission to use patient's files. In the research study, questionnaire containing both closed-ended and open-ended questions was used to collect data from the respondents.

3.8.1 DATA COLLECTION PROCESS

Data was collected using a questionnaire containing both closed-ended and open-ended questions developed by the researcher guided by the objectives of the study and related literature with the assistance of the supervisor. All patients who were diagnosed with hypertension who were available and willing to participate in the study were given consent form to complete (Annexure D). After signing the consent form indicating their willingness to participate in the study, those hypertensive patients completed the questionnaires and those who cannot read and write were assisted by the researcher. The signed consent forms were folded and put into a separate box from the anonymously completed questionnaires to ensure anonymity. In this way, no signed consent form could be linked to any specific completed questionnaire. The completed questionnaires were collected by the researcher immediately after completion.

The following variables were measured: physical activity level, socio-demographic information, dietary intake, anthropometric measurement, height, weight, alcohol consumption and tobacco usage. In order to determine the participant body mass index, their weight and height were measured by the researcher. Files and records obtained from the facilities were also perused in order to gather more relevant information about the treatment for hypertension.

Analysis of a total of 413 questionnaires were distributed, and all were completed and formed the base for computing the results. In addition, data gathered through the 413 questionnaire was subjected to frequency counts. In other words, the subjects' responses for each individual question were added together to find the highest frequency of occurrence (i.e. the number of times that a particular response occurs). These responses to the questions, which are quantified, are then presented in percentage forms. The analysis were presented in tabular form. The researcher used tables containing a variable and in some cases, combined two or more variables in a single table and the data from the questionnaires were statistically analysed by a statistician. The SPSS version 11

program was used for the data analysis. The findings were discussed according to the sections of the questionnaire. Sections of the questionnaire were:

Section A: Socio-demographic information

Section B: Alcohol consumption

Section C: Tobacco usage

Section D: Physical activity level

Section E: Dietary intake

The questionnaire was developed and pre-tested to check for anything that could impede the instrument's ability to collect data.

3.8.2 PHYSICAL ARRANGEMENT

The researcher was given a hall in both Primary Health Care facilities to assemble hypertensive patients for data collection. The halls had enough space to accommodate all the available respondents at the same time during the time of the study.

3.8.3 TOOLS AND SPECIFIC PROCEDURES

Questionnaire was used to collect data (Annexure E). The researcher developed the questionnaire with the assistance of the supervisor. The questionnaire was piloted and pre-tested to ten hypertensive patients on the 15th of June 2021 from ten respondents. Data was collected for Thirty days from the 21th of June 2021 till the 20th of August 2021 and the respondents were given one hour to complete the questionnaire where some respondents have finished before the end of time given. The respondent were 41 whereby the researcher managed 13 responded within 3 day in each PHC, all the questionnaire were clearly and fully completed. The questionnaire was self-administered and monitored by the researcher to ensure that respondents do not share information amongst each other and those who cannot read and write were assisted by the researcher.

3.9 QUANTITATIVE DATA ANALYSIS

Quantitative data analysis refers to the turning of raw material data in numerical form to meaningful data that could be interpreted and analyzed to understand and describe the patterns of the phenomenon (Connell, 2018:1893). It refers to the presentation,

interpreting and analysis of the data collected in an objective way that is void of any internal influence or researcher's bias (Connell, 2018:1893). Quantitative data was obtained from the questionnaire. The data that was collected was loaded into the SPSS version 23 to be analyzed. This data analysis focuses on numerical/quantitative data analysis. Before analysis, data coding of respondents and analysis were made. To analyze the data obtained without difficulties, the data was coded to SPSS 23.0 software as the data was obtained from questionnaires. This task involved identifying, classifying, and assigning a numeric or character symbol to data, which was done in only one way pre-coded. In this study, all the responses from the respondents were pre-coded. They were taken from the list of responses and several corresponding to each selection was given. This process was applied to every earlier question that needed this treatment. Upon completion, the data was then entered to a statistical analysis software package, SPSS version 23.0 on Windows 10 to be analyzed by the assistance of the statistician. Descriptive statistics and graphical analysis were employed where the findings were presented using graphs, diagrams, and tables in presenting the data. The analysis included, explored the relationship between variables and comparing responses from the respondents. This was done using cross tabulation/chi square, correlation, and factor analysis and using nonparametric statistic.

3.10 ETHICAL CONSIDERATIONS

In any discipline that involves research with human beings or animals, researchers must address a range of ethical issues (Mohajan, 2017:59). For the current study, the researcher made use of different ethical approaches to put ethical issues as a top priority of the study so that the study could be sound in all aspect of its conduct.

3.10.1 ETHICAL CLEARANCE PROCESS

To secure ethical approval, the researcher followed the following procedures:

- The researcher obtained approval on the 14 December 2020 to 31 November 2023 to conduct the research project from UNISA, Department of Health Studies (Annexure A).

- Then the researcher applied to conduct the research study at Limpopo Department of health ,the approval was obtained on the 08 June 2021 (Annexure B)

- The researcher presented a request letter along with an ethical clearance certificate from UNISA to the Limpopo department of health to request institutional consent.

- Institutional consent was granted from the Limpopo department of health after communicating with a letter prepared by the researcher and an ethical certificate indicating approval to conduct the research study.

- The researcher took the formal permission letter from Limpopo Department of Health to Mopani District Department of Health and informed the district about the study and the permission was granted on 08 June 2021 (Annexure C). She further secured verbal permission to conduct the study in the respective clinic.

- In order to curb the spread of the COVID-19 pandemic, the study was performed in accordance with the principles of the declaration of Helsinki (2013), good clinical practice and the laws of South Africa.

- The surface where the data was collected was cleaned and sanitized before and after data collection, the researcher screened and sanitized and wore face mask and face shade during data collection.

- No participant entered the study without being screened before data collection and after data collection.

- No respondents were allowed to participate in the study if they were feeling unwell. Respondents were provided with clean water and soap to clean their hands and sanitized with alcohol-based hand sanitizer that contains 60-95% alcohol before and after data collection. Only 20 respondents were allowed per session, and they stayed 1,5 meters away from each other and no hand shaking was allowed.

- No participant participated in the study without a facemask.

- No participant was allowed to exchange or share the papers during the study. No participant entered the study without signing the consent form after the objectives of the study were explained by the researcher.

- The anonymity of the respondents was ensured by using codes instead of names

and in any publication of the data.

- She commenced the formal data collection process as per sampling procedure.

- All relevant bodies were informed about the right to request and access the final report of this study.

- Each step of the current study was given due emphasis to maintain its ethicality.

3.10.2 INFORMED CONSENT

Obtaining informed consent is when a participant voluntarily agrees to participate in a research study in which he or she has full understanding of the study before it begins (Brink, 2016:123). This is also supported by the Department of Health (2015:16), describing that participating in research must be voluntary and predicated on informed choices. In this study, the researcher obtained verbal and written consent from the respondents before undergoing the research questions. The researcher described the nature of the research study to the respondents, its intended purposes, and gave the respondents time to make an informed decision about the research study. The researcher also informed the respondents that they were participating voluntarily and that they could withdraw from the study any time if they felt uncomfortable.

3.10.3 PRIVACY AND CONFIDENTIALITY

Confidentiality and privacy were maintained by avoiding respondents' names during the focus group discussions. Name substitutions before the session begun were negotiated with respondents to assign codes to them for the researcher to use, so as to identify them when going through the notes. If any participant expressed concern about their privacy during data collection, the researcher assured them that the researcher had taken special precautions to protect their identities and the data. If, after these assurances, any respondents were uncomfortable and wished to withdraw from the study, the researcher would have respectfully acknowledged and supported their right to do so and thanked them for their time and effort.

3.10.4 PRINCIPLE OF BENEFICENCE

One of most fundamental ethical principles in research is that of beneficence which imposes a duty on researchers to minimise harm and maximise benefits. This principle covers multiple dimensions such as the right to freedom from harm and discomfort, the

right to protection from exploitation. Thomas and Mathew, A. 2020:359) argues that to adhere to this principle, the researcher needs to secure the wellbeing of the participant, who has the right to be protected from discomfort and harm; be it physical, psychological, emotional, economic, social or legal. The study emphasised a moral responsibility to do things for the benefit of others. The researcher and research assistants guarded against any discomfort that might occur and immediately phrased the question so that it could not appear to be a personal experience. In general, before the respondents were interviewed: the purpose of the study was communicated.

3.10.5 PRINCIPLE OF JUSTICE

The principle of justice refers to the respondents' right to fair selection and treatment. The researcher must select, with fairness, the study population in general and the respondents (Thomas and Mathew, 2020:360). In the study, the researcher had a fair selection of the hypertensive patients to participate in the study. The researcher also ensured that both males and females who were willing to participate were involved in the study. Though respondents were not equally respected and were given similar information on the study.

3.11 CONCLUSION

This chapter elaborated on the research design and methods used. It also emphasised the ethical conduct of the study so that scientifically sound findings could be achieved. The next chapter involves a presentation and discussion of the study's results.

CHAPTER FOUR

ANALYSIS, PRESENTATION AND DESCRIPTION OF THE RESEARCH FINDINGS

4.1 INTRODUCTION

This chapter discusses the data analysis and findings from 413 questionnaires completed by hypertensive patients who visited one of the ten participating Primary Health Care centres in Greater Giyani Subdistrict, Mopani District area during 2021. The purpose of this study was to determine healthy lifestyle-behavior of hypertensive patients at Primary Health Care facilities in Greater Giyani Subdistrict, Mopani District in Limpopo Province.

4.2 SOCIO-DEMOGRAPHIC DATA

The socio demographic data presented in this study covered participant's gender, age, marital status, ethnic group, educational level, family size, breadwinner and employment status. Though not central to the study, the demographic data helped contextualise the findings and the formulation of appropriate recommendations to enable more hypertensive patients to practice healthy lifestyle behaviour to prevent diseases.

4.2.1 RESPONDENTS GENDER

The respondents were asked to indicate their gender.
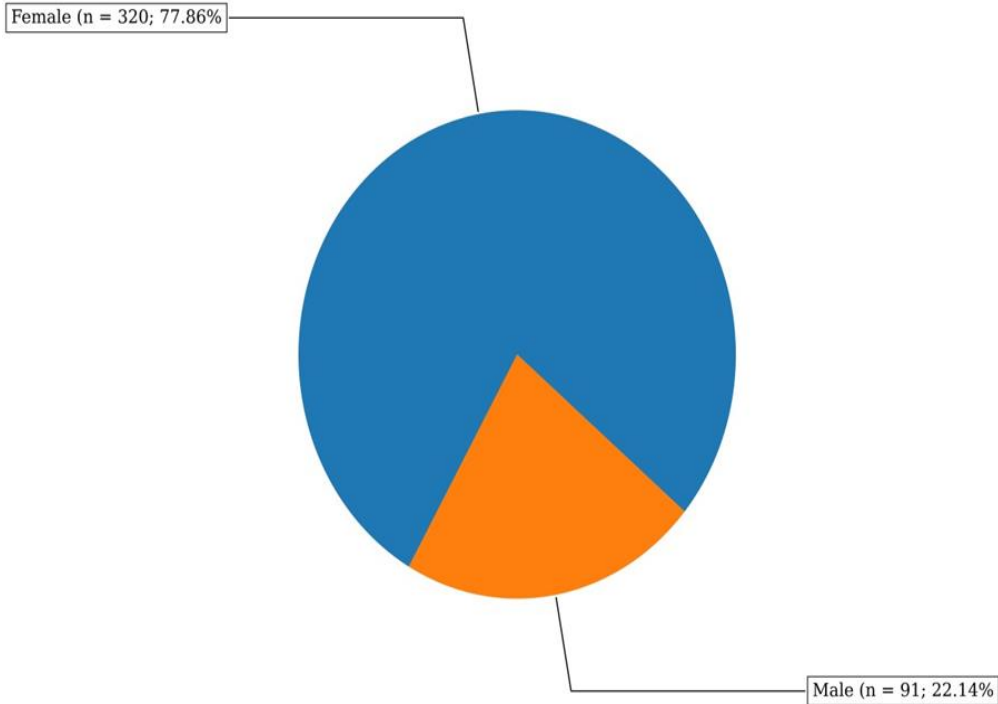
Figure 4.1: Respondent's Gender

Figure 4.1 depicts the respondent's gender.The first variable, gender, and reflected that 320 (77.88%) respondents were females while the remaining 91 (22.14%) respondents were males which denotes that majority of respondents having hypertension are females as compared to males.

4.2.2 RESPONDENTS AGE

The respondents were asked how old they were during the time of the study.

TABLE 4.1: RESPONDENTS' AGES AT THE TIME OF COMPLETING THE QUESTIONNAIRES

AGE	sample (n=413)	
	n	%
Age in years(n=413)	45	10.9%
18-36	128	31.0%
37-54	157	38.0%
55-71	65	15.7%
72-90	18	4.4%
91-108	45	10.9%
Mean age ±SD	57.8	

Table 4.1 depicts the respondents' ages. The variable, age, reflected that 157 (38%) of the respondents belonged to the 37-54 age group, followed by 18-36 age group with 128 (31%) respondents and the lowest was 18 (4.4%) respondents who belonged to the 72-90 age group. This indicates that there are more people from the age of 18 to 54 who are hypertensive though it further extends to over 90 years of age.

4.2.3 ETHNIC GROUPS

The respondents were asked to indicate their ethnic group
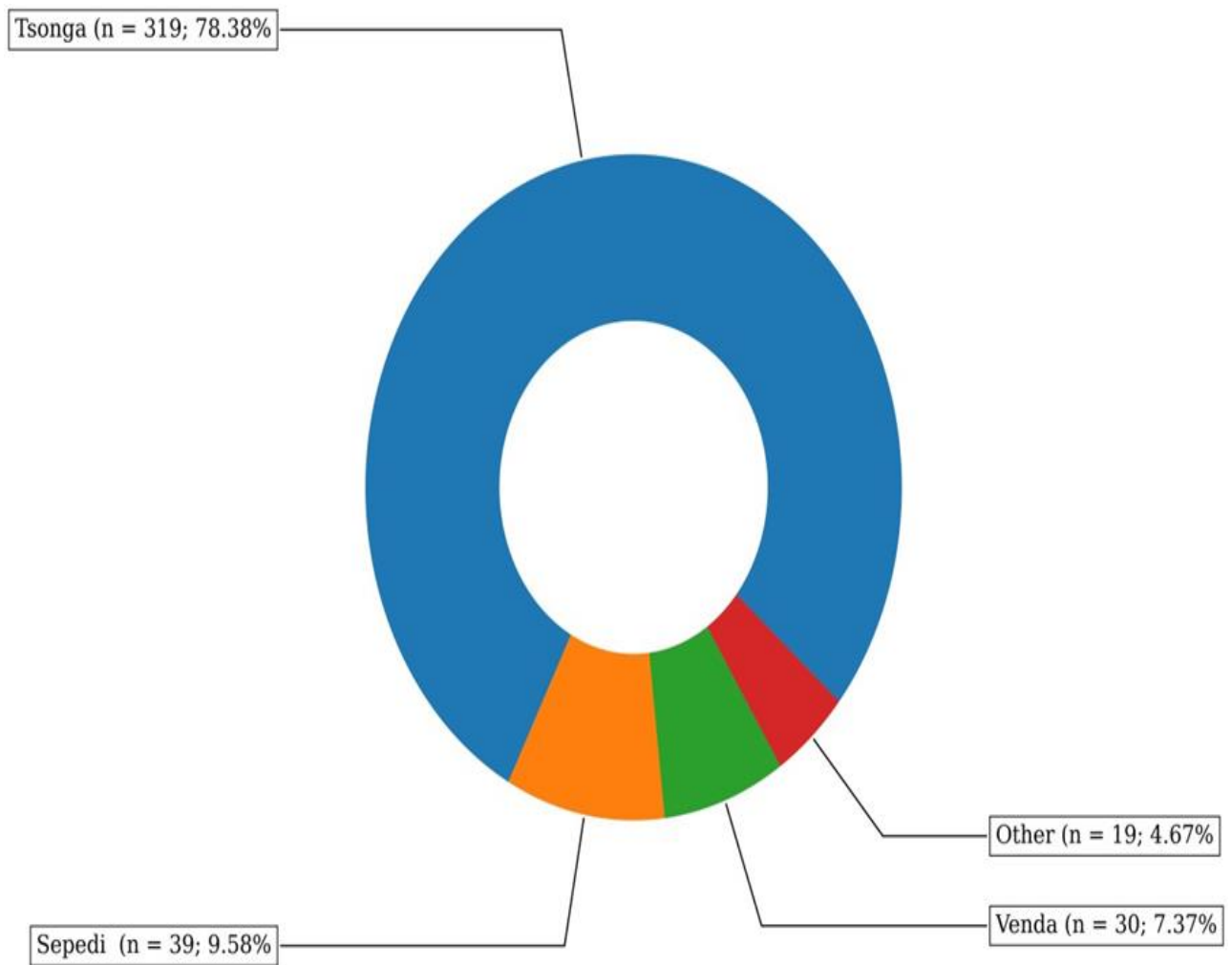
Figure 4.2: Ethnic group distribution of hypertensive patients
Figure 4.2 reflects the respondents' ethnic group.

Of the 413 respondents, majority of respondents amounting to 319 (78.38%) were Tsonga speaking people, followed by Sepedi speaking people with 39 (9.58%) respondents, Venda speaking people who accounted for 7.37% with 30 respondents and lastly 19 (4.67%) respondents who indicated other. Tsonga hypertensive patients were well represented in this sample. Based on the findings, the research results might not be generalizable to hypertensive patients with home languages other than Tsonga, probably because the ten participating clinics were in areas where predominantly Tsonga-speaking people live. Moreover, Greater Giyani is popularly a Tsonga dominated area with few Pedi speaking villages surrounding it.

4.2.4 Marital status

Respondents were ask to indicate their marital status.
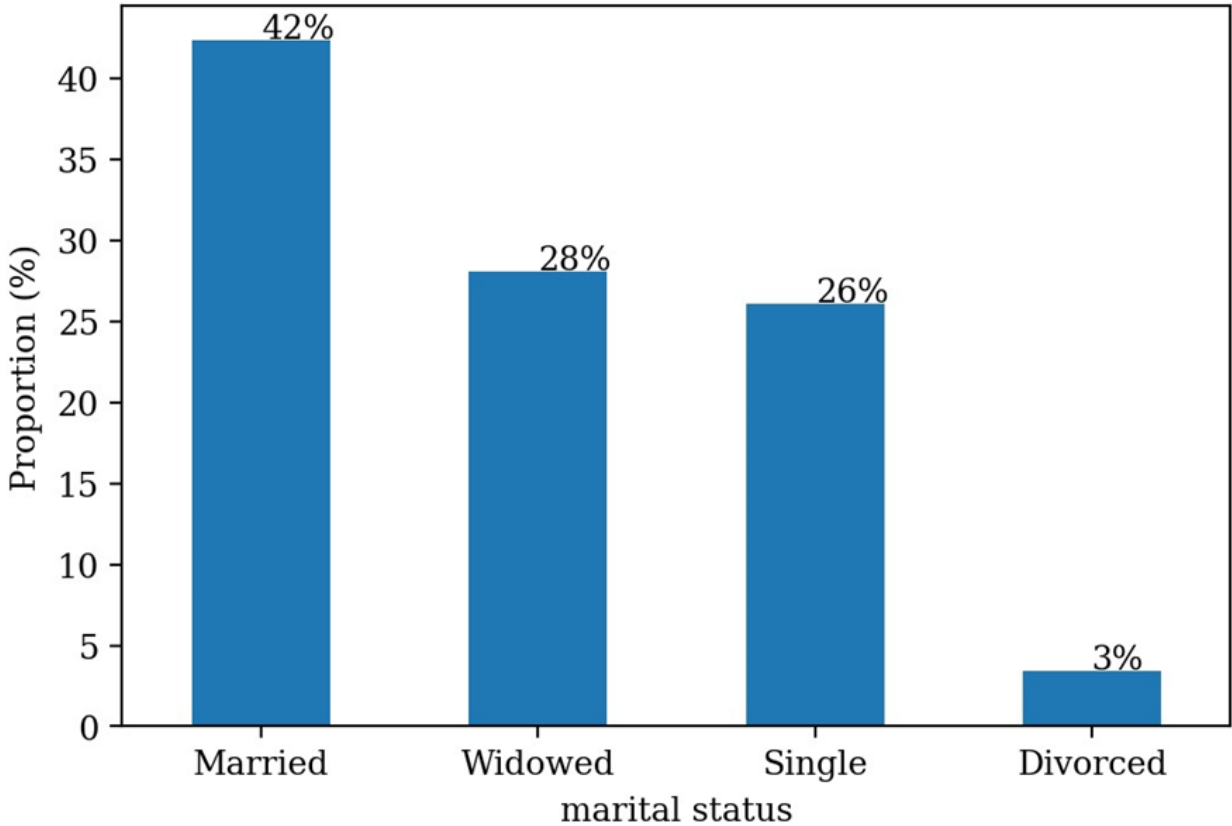
Figure 4.3: Respondents marital status

Figure 4.3 reflects respondent's marital status. Of the 413 respondents, 172 (42.36%) respondents indicated that they are married, 114 (28.08%) respondents were widowed, 106 (26.11%) respondents were single and lastly 14 (3.45%) were divorced, which denotes that majority of respondents having hypertension are married as compared to divorced. Furthermore, table 4.2 shows that 151(36.92%) of the respondents have secondary education, 135 (33.01%) respondents have never attended school, 82 (20.05%) respondents have primary education and lastly 41 (10.02%) respondents have tertiary education. This implies that with more knowledge and consumption of healthy food, more hypertensive patients might have been able to practice healthy life style.

Moreover, more than three thirds of the respondents (n = 282; 70.85%) were unemployed while the remaining 29.15% (n = 116) were employed. Furthermore, 58% of the respondents were breadwinners, and the minimum and maximum household sizes reported from them are 1 and 19 people respectively. The mean and the standard

deviation are 5 people and 3 people respectively. Figure 4.4 below depicts the minimum, mean, median, quartile and maximum household sizes reported by the respondents.

TABLE 4.2: DEMOGRAPHIC CHARACTERISTICS

Demographic characteristics	Sample n=413	
	n	%
Educational level		
Primary	82	20.05%
Secondary	151	36.92%
Tertiary	41	10.02%
Never attend	135	33.01%
Employment status		
Unemployed	288	69.7%
Employed	125	30.3%
Breadwinner		
My self	236	58%
Mother	36	8.7%
Father	25	6%
Grandparents	6	1%

Table 4.2 shows the distribution of the studied hypertensive patients according to their socio-demographic characteristics.majority of the respondents (n = 151; 36.92%) from them reported that they went to secondary, (n = 135; 33.01%) from them never attend then 20.05% (n = 82) who went to primary and lastly 10.02% (n = 41) who attended tertiary.Moreover More than three thirds of the respondents (n = 288; 69,7%) were unemployed while the remaining 30.3% (n = 125) were employed.58% from them were breadwinner, and the minimum and maximum household sizes reported from them are 1 and 19 people respectively. The mean and the standard deviation are 5 people and 3 people respectively was also reported.Figure.4.4 below depicts the minimum, mean, median, quartile and maximum household sizes reported by the respondents.
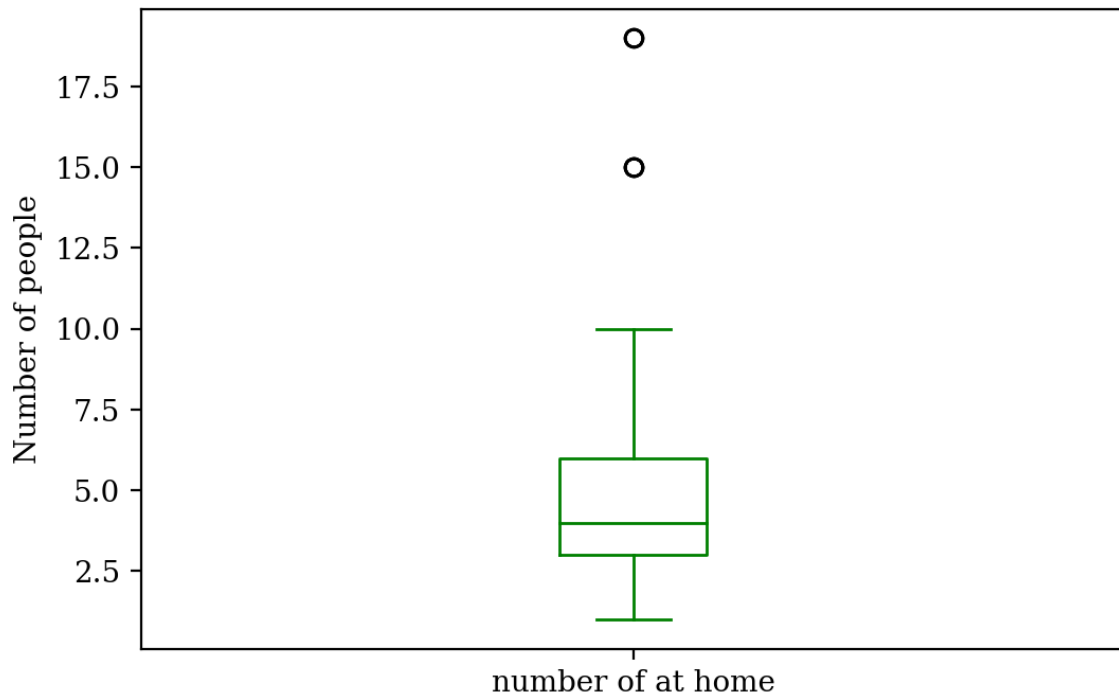
Figure 4.4: Respondents household number

4.3 ALCOHOL CONSUMPTION

This section consisted of ten questions about alcohol consumption by the participating hypertensive patients at different stages of their lives, in relation to potentially significant events in their lives, such as their age at their first time drinking alcohol.

4.3.1 ALCOHOL CONSUMPTION OF THE STUDY RESPONDENT

This question was asked to identify whether or not the respondents drink alcohol.
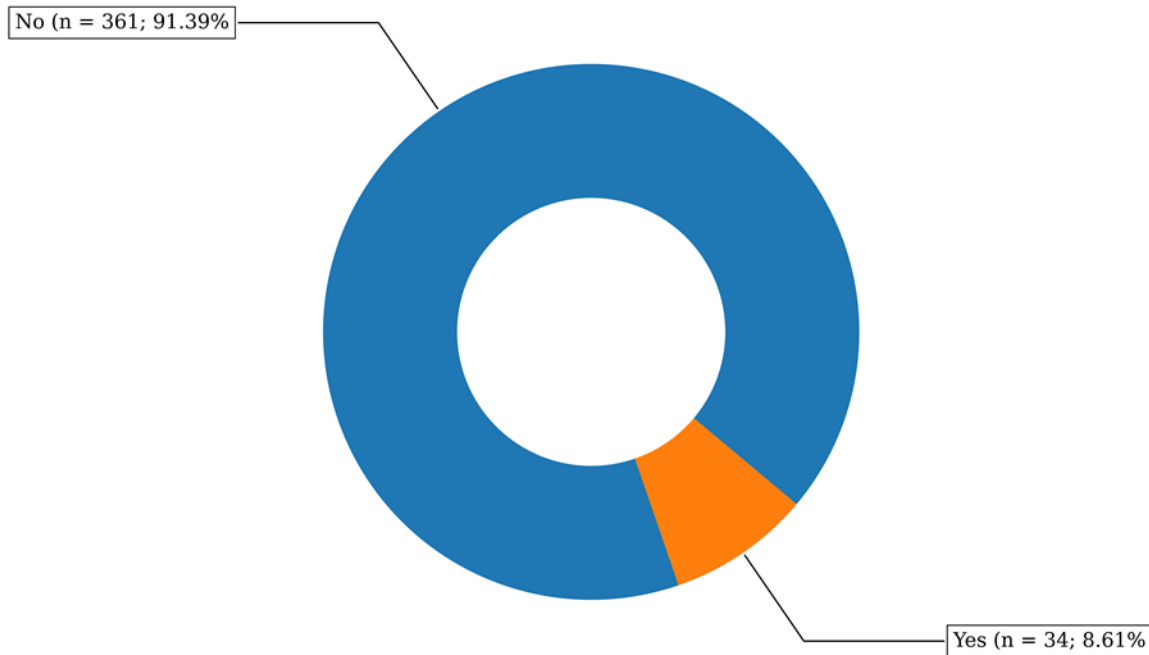
Figure 4.5: Respondents alcohol consumption

Figure 4.5 reflects alcohol consumption of respondents. Alcohol consumption variable was also included to study lifestyle behaviour of hypertensive patients. Figure 4.5 reflects that majority of the respondent (n = 361; 91.39%) did not consume alcohol while the remaining 8.61% (n = 34) consume alcohol. Which denotes that majority of respondents having hypertension did not consume alcohol. The fact that the majority of the respondent did not consume alcohol might either be attributed to the high level of unemployment and lack of financial muscle. However, good as it is, there was no evidence of awareness in terms of how it impacted their hypertensive condition. Chances were either alcohol did not have a bearing on their condition but on a positive note, the respondents were safe from the impact that alcohol might have on their lives and health conditions in general.

4.3.2 AGE OF ALCOHOL CONSUMPTION OF STUDY PARTICIPANT

This question was asked to identify whether or not the respondents had started drinking alcohol prior to having hypertension.

TABLE 4.3: AGE ALCOHOL CONSUMPTION

Age categories	SAMPLE N=413	
	n	%

38

18-30	32	94.1%
31-50	-	-
51-60	2	5.9%

Table 4.3 depict alcohol consumption age. Knowing the age at which they started consuming alcohol indicates what knowledge as well as healthy lifestyle information should be provided. This is important to enable hypertension patients to make informed decisions prior to embarking on drinking alcohol. Learning about quieting only after already drinking alcohol might deprive many hypertensive patients of the opportunity to make informed decisions about their own health. The minimum and maximum values for the age of survey respondents is 4 and 52 years respectively. The mean and the standard deviation are 23.61 years and 9.50 years respectively. This implies that 95% of survey respondents were aged between 4.62 years and 42.61 years old (95% CI: (4.62, 42.61)) when consuming alcohol.

4.3.3. MOSTLY CONSUMED ALCOHOL OF THE STUDY PARTICIPANT

This question aimed to identify which alcohol is consumed mostly.

FIGURE 4.7 MOSTLY CONSUMED ALCOHOL
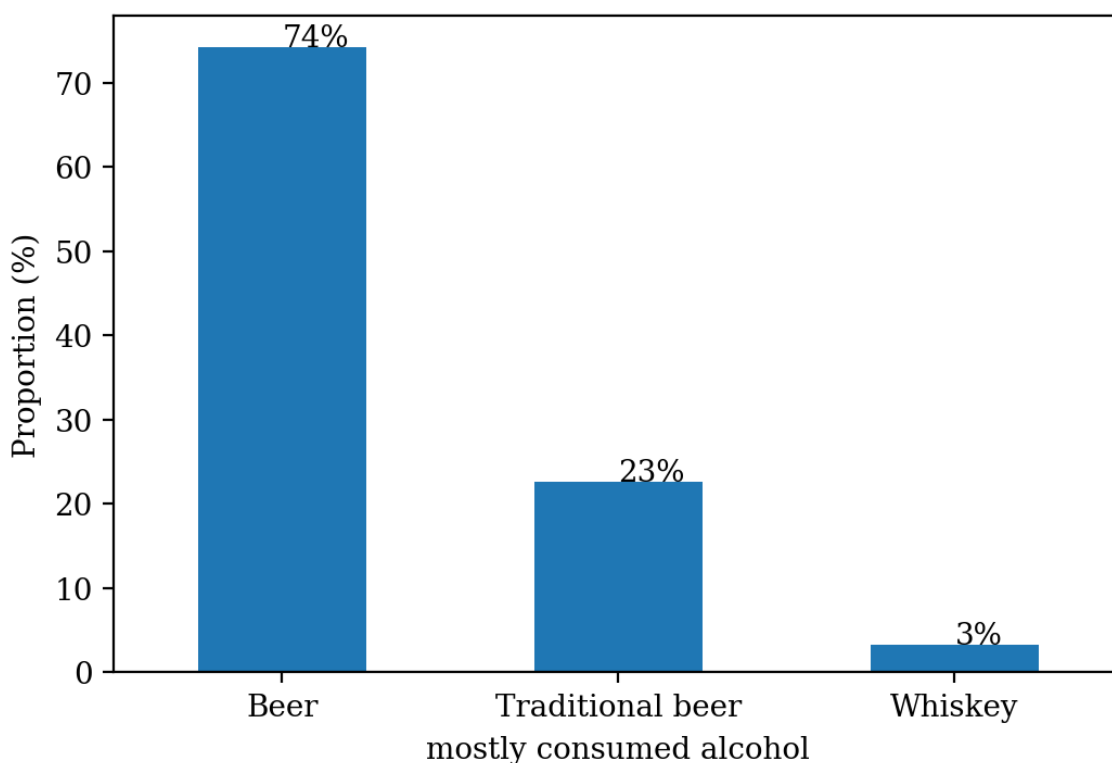
Four different types of alcohol were listed for the respondents to choose from the alcohol provided as reflected in figure 4.7.Most of the respondents (n = 23; 74.19%) in this study indicated that the mostly consumed alcohol is beers, followed by traditional beer (n = 7; 22.58%) while the remaining 3% (n = 7) is whiskey. The study revealed that most consumed alcohol was beer, which attested to the fact that those who were drinking were either working or had reliant means of generating income for survival. Beers are associated with pride and fame while traditional beer is usually associated with unsophisticated and primitive behavioural lifestyle. However, since the area is predominantly rural, people derived pleasure out of consuming traditional or homemade beers, as it is assumed to be not detrimental to their lives. But this could not be quantified as alcohol remains alcohol whether home brewed or not. Besides the pride associated with drinking beers as opposed to traditional beer, the latter is more affordable. Since most of the respondents were not working, it provided them with the opportunity to sit around and socialise in an affordable way.

4.3.4 REASON FOR DRINKING ALCOHOL

This question aimed to identify reasons why the respondents engaged in alcohol consumption for the first time. Three reasons and a space for other reasons, which respondents could specify, were provided. Table 4.4 and Figure 4.1 reveal that of the 413 hypertensive patients, 32 (94, 1%) had engaged in alcohol consumption by the time they reached the age of 18. It is important to study the age at first alcohol consumption to identify the risk of hypertension before they engage in binge drinking. Measures could then be taken to prevent them from drinking alcohol and encourage them through education about healthy lifestyle behaviour, throughout their entire life.

TABLE 4.4: REASON FOR CONSUMING ALCOHOL

Reason to start consuming alcohol	SAMPLE N=413	
	n	%
Pressure	10	29.4%
Curiosity	13	38.2%
Boredom	5	14.7%

Other, specify	6	17.6%

Of the 413 respondents, 379 respondents did not reply to this question but the other 34 chose from the reasons provided as depicted in table 4.5.The findings revealed that of the 413 respondents, 38.2% of the respondents started consuming alcohol because of curiosity, while 29.4% of the respondents started consuming alcohol because of the peer pressure, then 14.79% of the respondents started consuming alcohol due to boredom and lastly 17.6% of the respondents who mentioned other. Although the 13 (38.2%) respondents who indicated that they started drinking alcohol due to curiosity for the first time did not elaborate on this, the different reasons cited for the consumption of alcohol above reflected various perceptions that the respondents had on alcohol and its impact on their social lives. While curiosity was the most common reason given, boredom was the second most common cause, indicating that the neighbourhood lacked the required recreational opportunities to deter people from engaging in unhealthy lifestyle activities. That does not, however, imply that boredom should lead to the drinking of alcoholic beverages. Although peer pressure is typically linked with young, indecisive people, it's reasonable to expect that alcohol consumption education and knowledge of good lifestyle choices would have enabled them to make better health decisions.

4.3.5. ALCOHOL FREQUENCY CONSUMPTION

Respondents were asked to indicate how often they drink, how many drinks and during what time they drink alcohol.

TABLE 4.5: ALCOHOL FREQUENCY CONSUMPTION

Alcohol consumption	Sample n=413	
	n	%
Did you use alcohol in the past month		
yes	27	79.4%
no	4	11.8%
how many drinks did you have during that time		
0	2	6.1%
1-2	7	21.2%
3-4	11	33.3%
5-6	8	24.2%

7 and above	5	15.2%
How often do you drink		
Everyday	2	5.9%
3-5 times a week	7	20.6%
Once a week	9	26.5%
Only on weekends	9	26.5%
Occasionally	7	20.6%

Table 4.5 depicts alcohol frequency consumption

4.3.6. BINGE DRINKING

In this variable, the majority of respondents (n = 25; 83.33%) do not engage in binge drinking, while the remaining (n=3; 10.0%) engage in binge drinking.
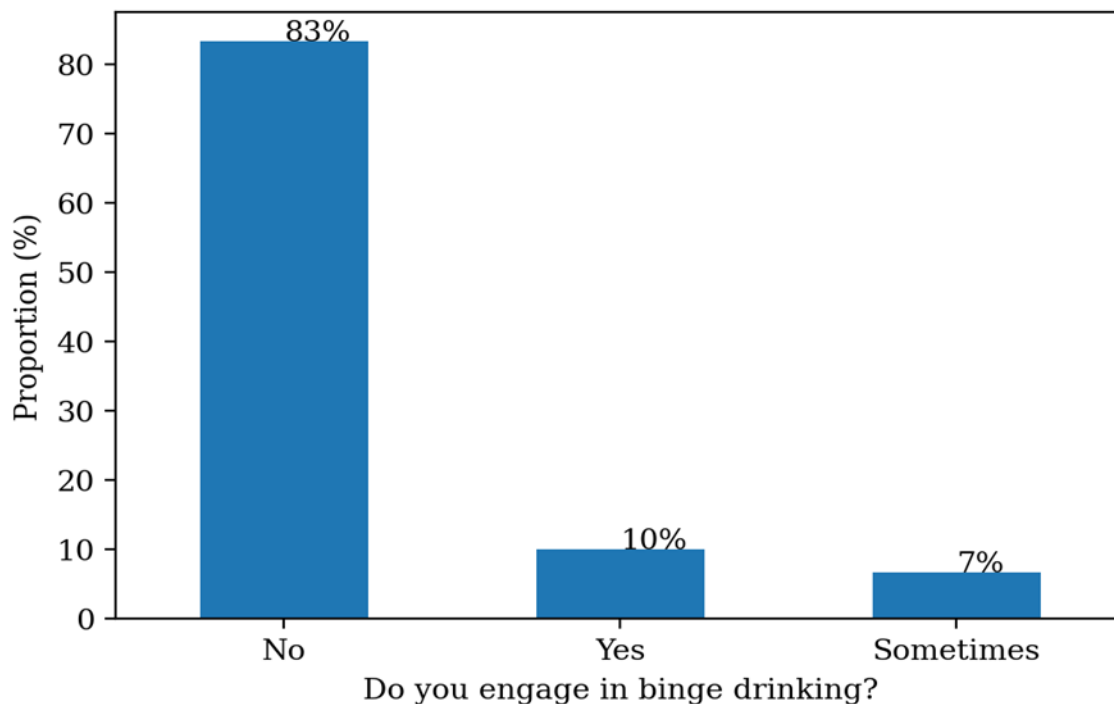
Figure 4.8: Binge drinking

Figure 4.8 represents binge drinking.

4.3.7 SKIPPED MEAL DUE TO DRINKING

This question was asked to check if drinking alcohol disturbs them from eating food. Figure 4.10 reflects loss of appetite.

Figure 4.9: Skipped meals due to drinking

Figure 4.9 reflects if respondents skip meals.
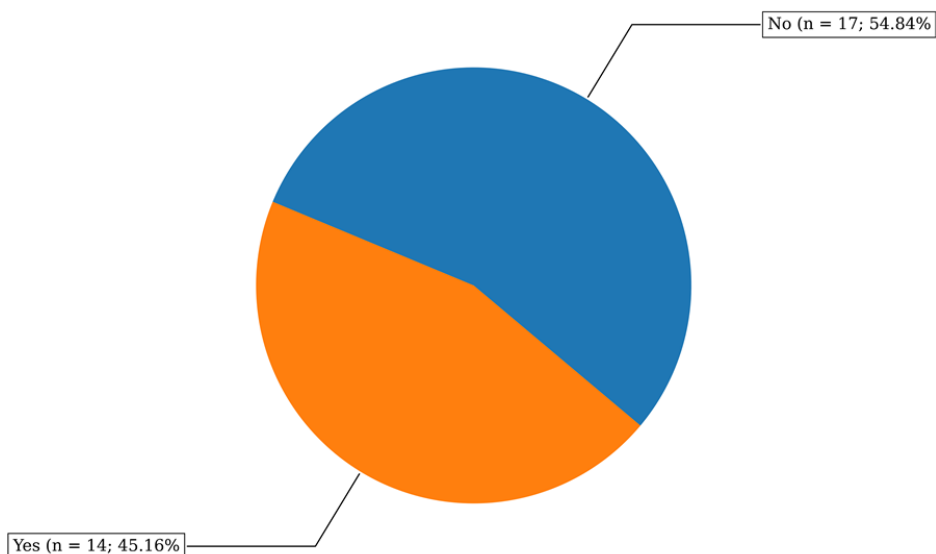
Figure 4.10: Loss of appetite

About 54.84% of respondents do not lose appetite due to alcohol while 45.16% of the respondents skipped meals due to drinking. This means that more of hypertensive patients who consume alcohol can control their eating patterns while the remaining skip meals. Moreover, the study revealed that 26.11% of the respondents were single. Single people are usually prone to various lifestyle behaviours in general since most of them enjoy the freedom of movement and association. Drinking of alcohol became their best way of socialising and this impacted negatively on their meals intake interval.

4.4 TOBACCO USE

This section consisted of FOUR questions about tobacco use by the participating hypertensive patients at different stages of their lives, in relation to potentially significant events in their lives, such as their age at their first time using tobacco.

4.4.1 DO YOU SMOKE?

Tobacco use variable was also included to study lifestyle behaviour of hypertensive patients.
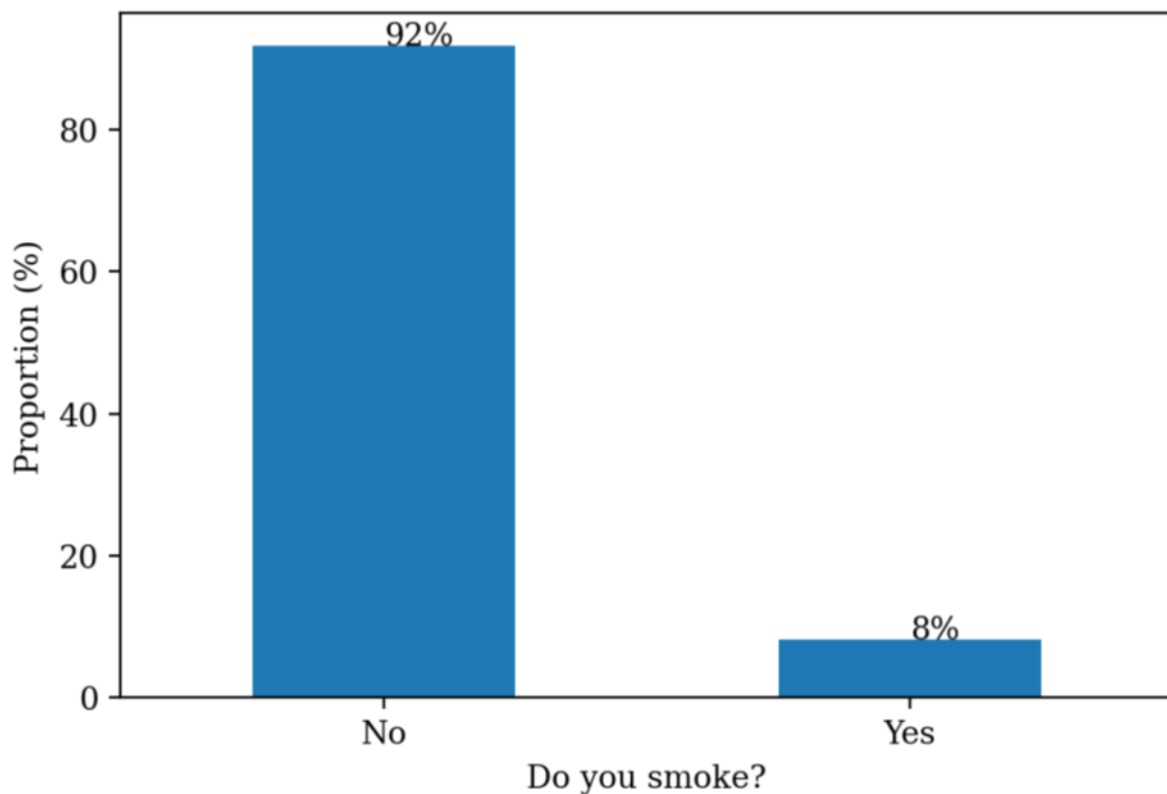
Figure 4.11: Do you smoke?

Figure 4.11 shows that majority of the respondents (n = 335; 91.78%) did not smoke cigarettes while the remaining 8.22% (n = 30) smoke cigarettes. Which denotes that majority of respondents having hypertension do not smoke cigarettes.

4.4.2 NUMBER OF YEARS SMOKING

Of the 413 respondents, majority of the respondents (n = 297; 71.88%) have been smoking for 5 years and above, followed by 1-2 years (n = 79; 18.75%) while the remaining 9% (n = 37) has been smoking for 3-4 years which indicates that most hypertensive patients have been smoking for so long.
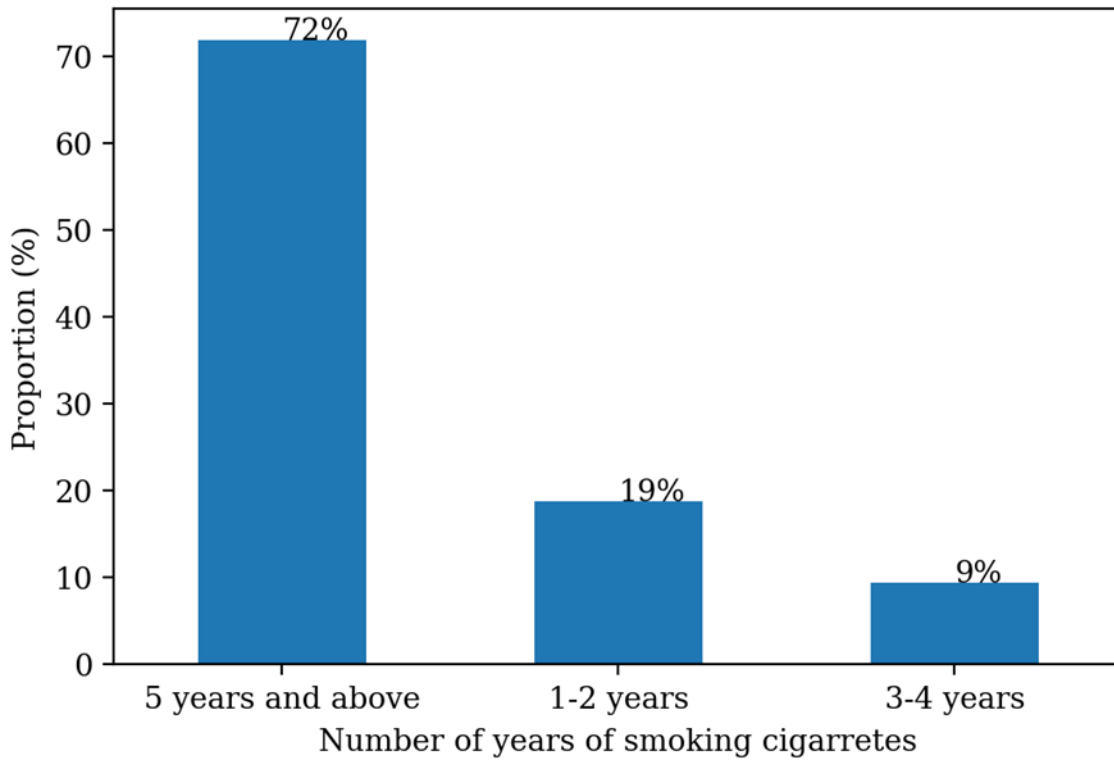
Figure 4.12: Number of years smoking

Figure 4.12 reflects on the number of years smoking.

4.4.3 NUMBER OF TOBACCO USED PER DAY
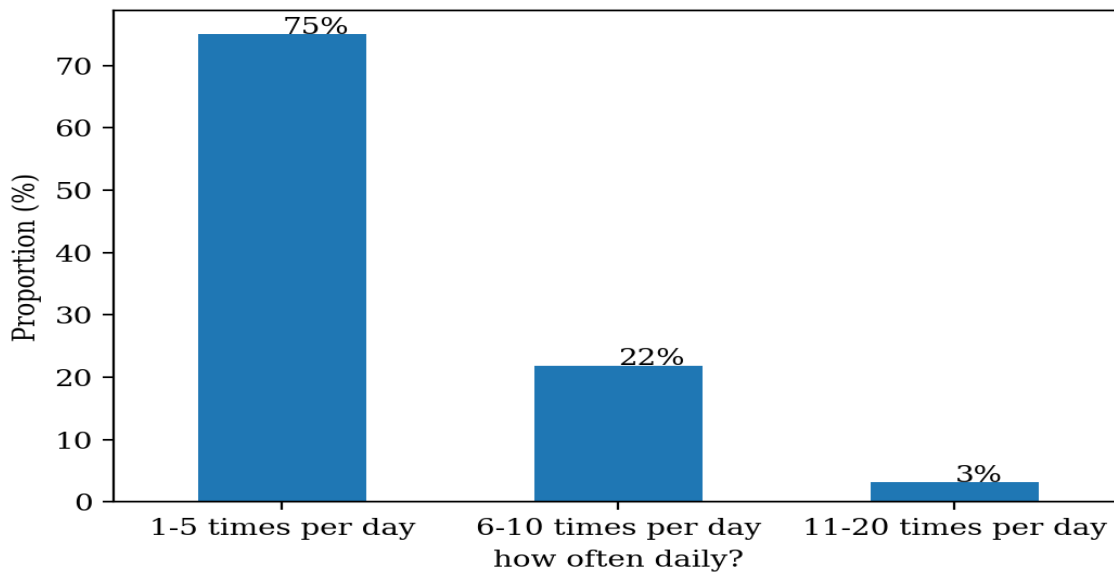
Figure 4.13: Tobacco use daily

Figure 4.13 shows that majority of the respondents (n=24; 75.0%) smoke 1-5 times per day, followed by 6-10 times per day (n=7; 21.88%) while the remaining 21.88 % (n=7) smoke 6-10 times per day.

4.4.4 SMOKING FREQUENCY
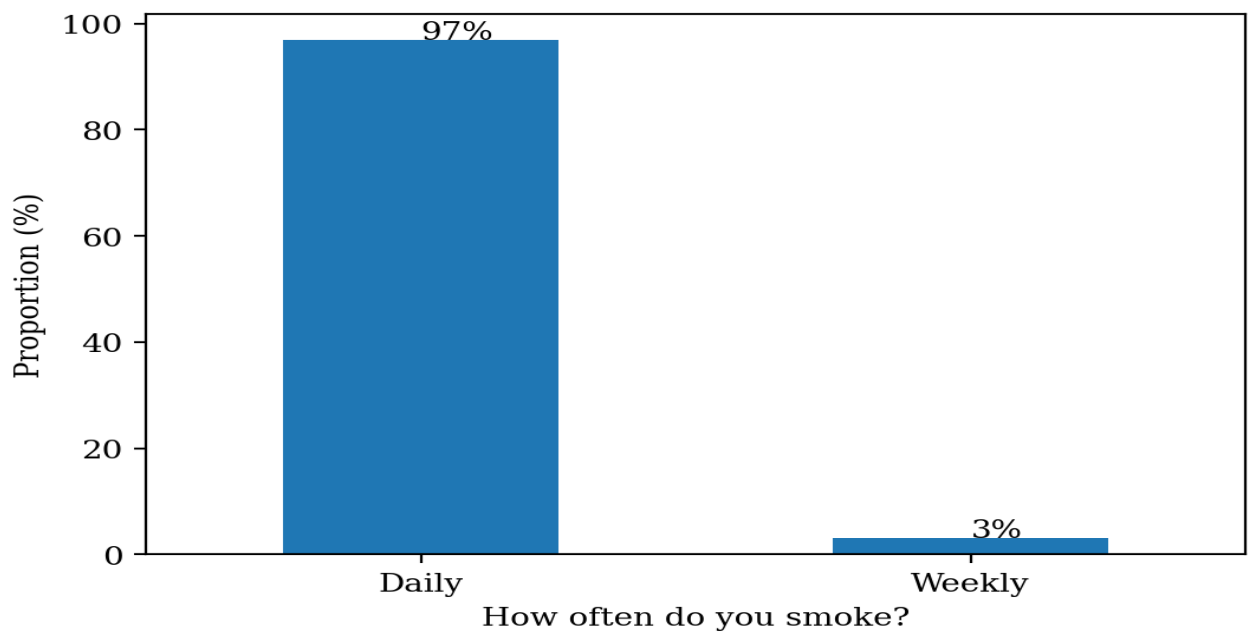
Figure 4.14: Smoking frequency

Figure 4.14 shows that the vast majority of the respondents (n=31; 96.88%) smoked daily, whereas the remaining 3.12% (n=1) smoked weekly. Which implies that the majority of hypertension patients who smoke do so on a daily basis.

4.5 PHYSICAL ACTIVITY

4.5.1 DO YOU DO VIGOROUS INTENSIVE ACTIVITY?

Physical activity variable was also included to study lifestyle behaviour of hypertensive patients.
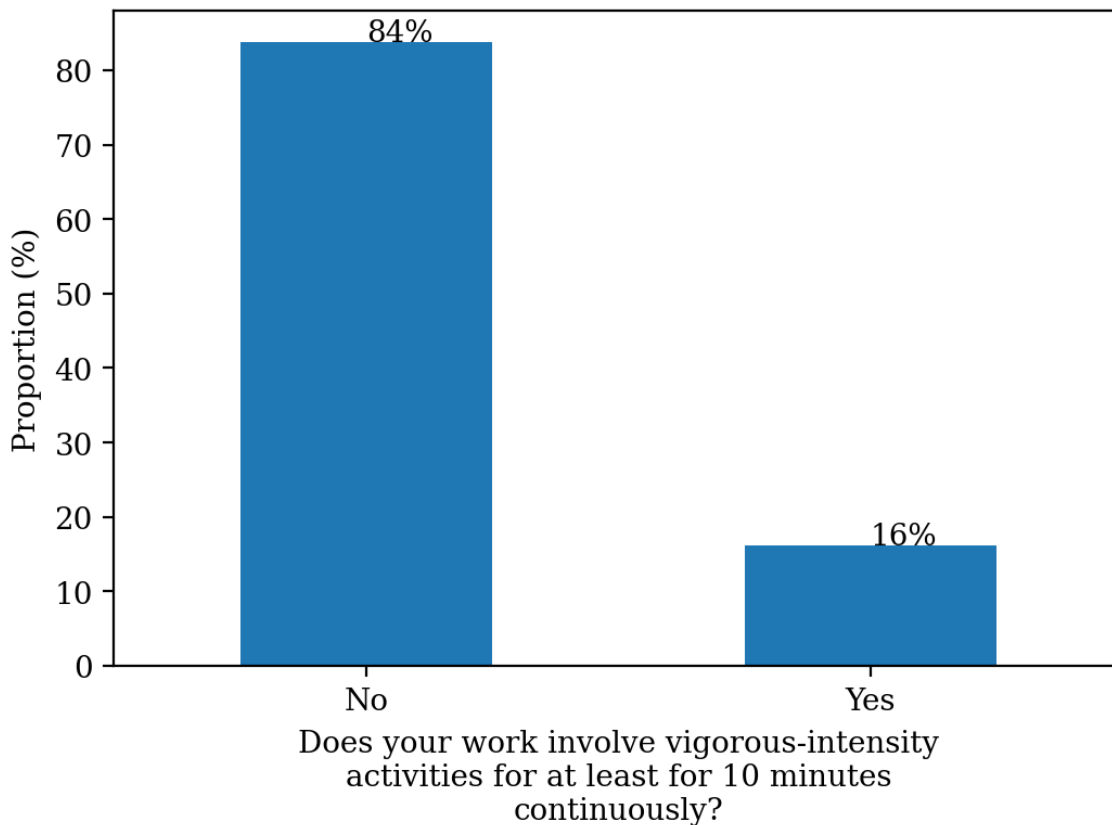
Figure 4.15: Vigorous-intensity activity

Figure 4.15 reflects that majority of the respondents (n=238; 83.8%) do not do vigorous-intensity activities while the remaining 16.2% do the vigorous-intensity activities. Which donate that many of hypertensive patients are physical inactive. This could also be attributed to lack of health education and ignorance, but also the nature of the environment in which the respondents lived had a bearing as the study was conducted in a predominantly rural area.

4.5.2 HOW MANY DAYS DO YOU DO VIGOROUS-INTENSIVE ACTIVITY
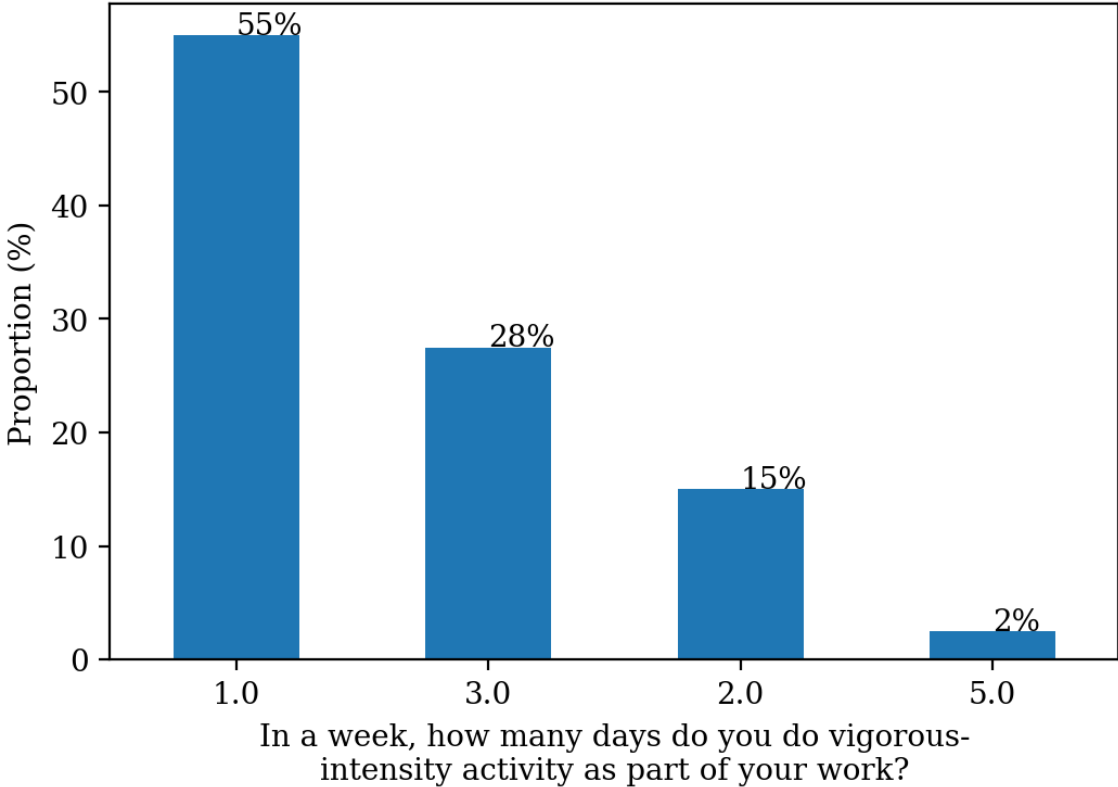
Figure 4.16: Days of vigorous activity in a week

Figure 4.16 shows that more than half of the respondents (55.0%) conduct vigorous activity 1-3 days per week and only 15.0% do it 3-5 days per week, with a minimum and maximum value of 1.0 and 5.0, respectively, and an average age of 1.8 and a standard deviation of 1.02.

4.5.3 HOW MUCH TIME DO THEY SPEND DOING VIGOROUS INTENSITY ACTIVITY?

.
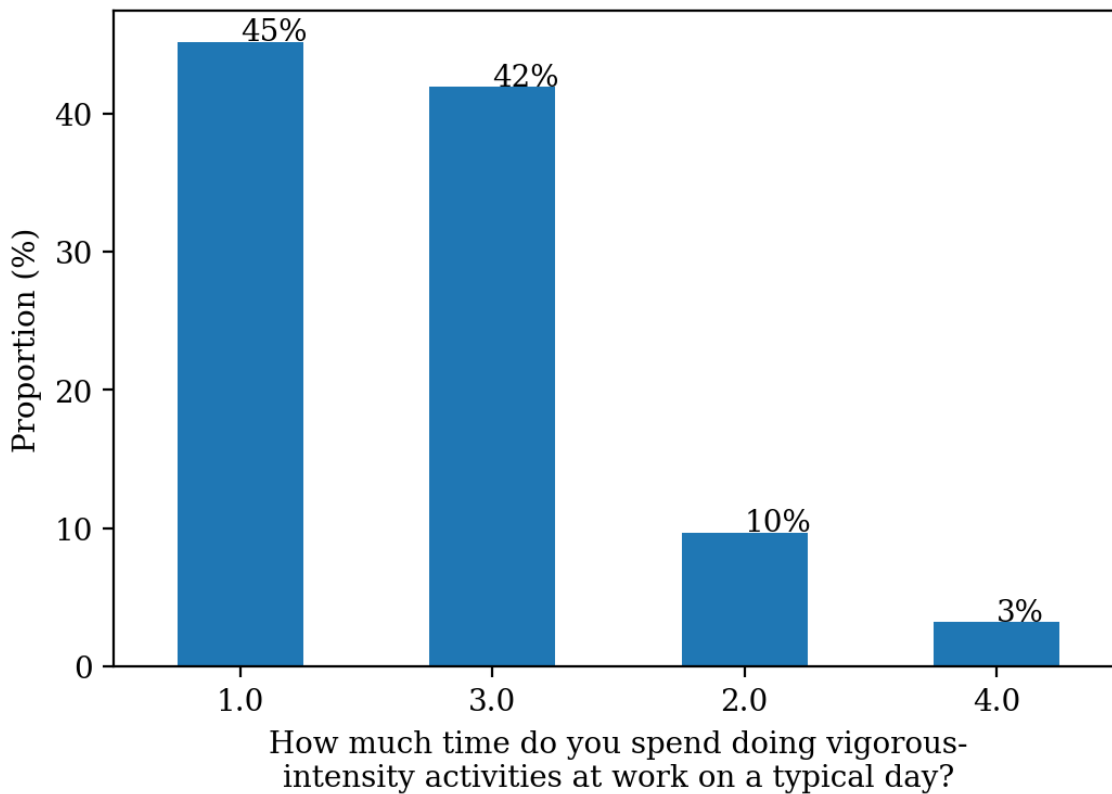
Figure 4.17: Time spent doing vigorous activity

Figure 4.17 shows that about 45% of the respondents spend 10 minutes doing vigorous –intensity activities. Furthermore, 31.0 respondents responded to question 26 based on this variable. A minimum value and maximum value of 1.0 and 4.0 respectively was observed. An average age of 2.03 and a standard deviation of 1.02 were also observed

4.5.4 MODERATE-INTENSITY ACTIVITY

The findings revealed that the majority of the respondents (n=189; 73.26 %%) do not do moderate-intensity activities while the remaining 26.75% do moderate-intensity activities. This reflects that only few of hypertensive patients are involved in moderate intensity activity.
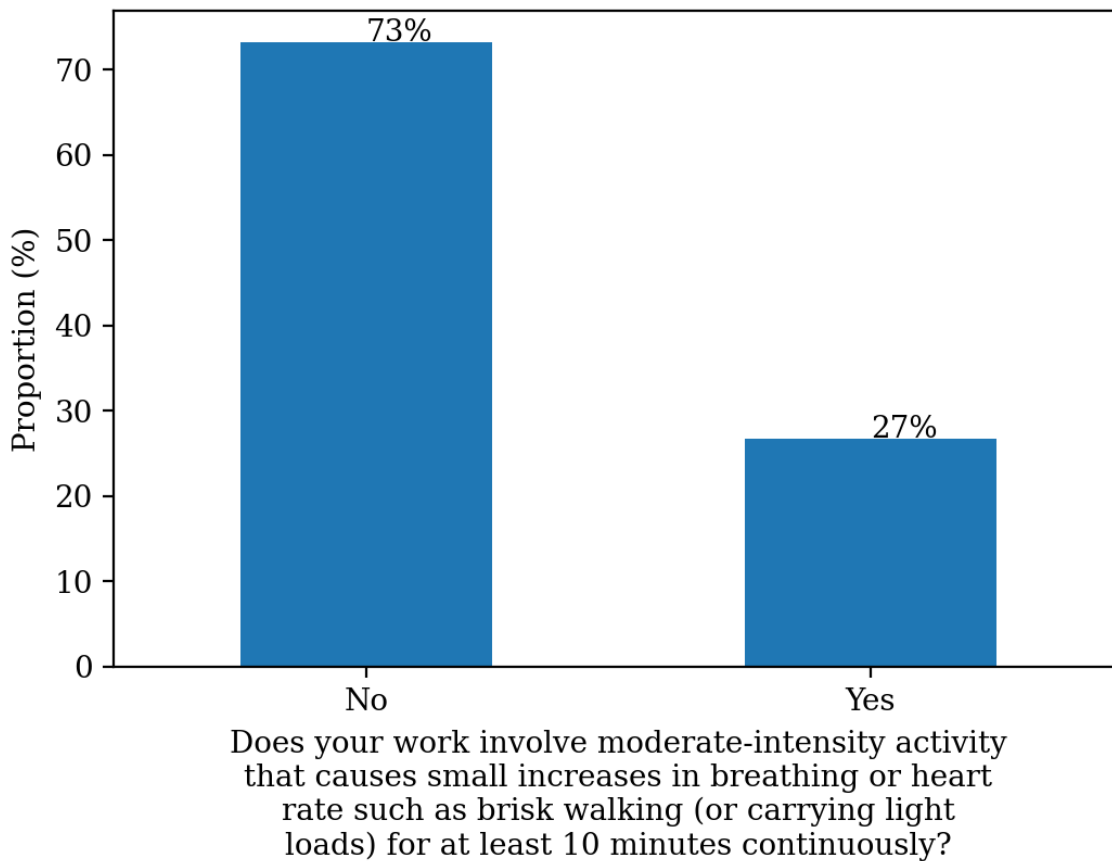
Figure 4.18: Moderate-intensity activity

Figure 4.18 reflects moderate-intensity activity.

4.5.5 DAYS IN A WEEK MODERATE-INTENSITY ACTIVITY DONE
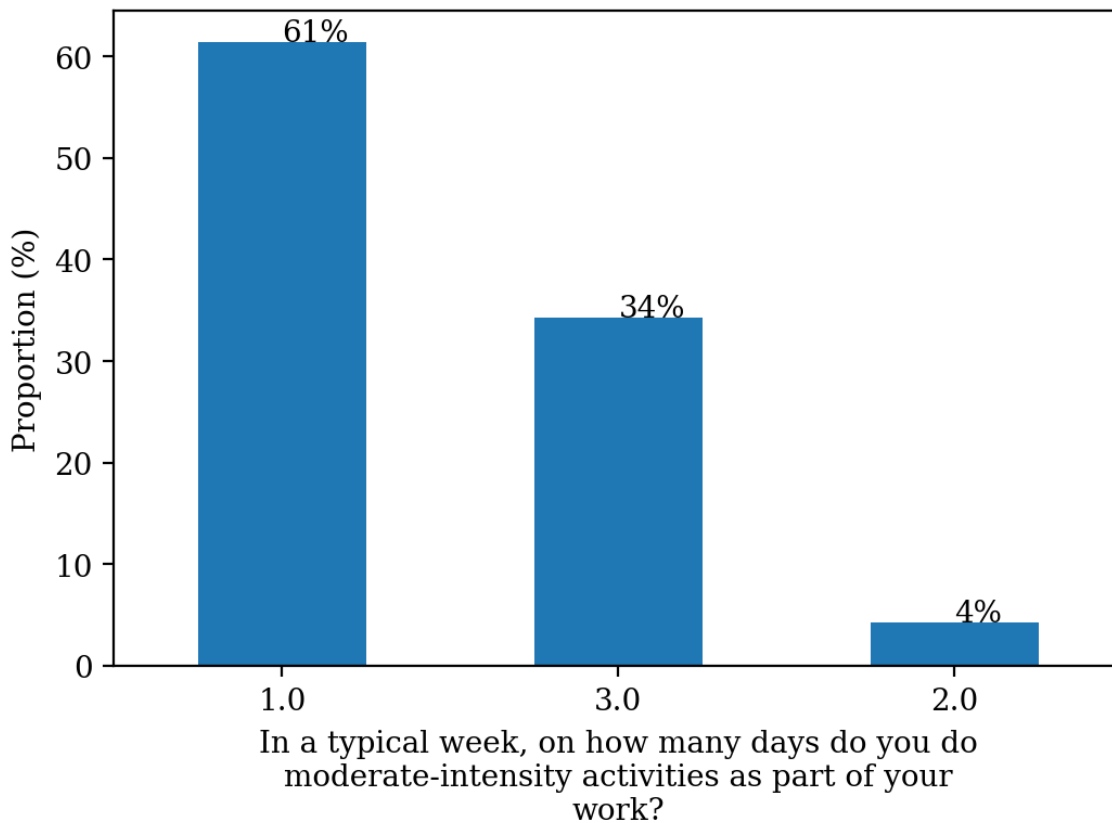
Figure 4.19: Days in a week moderate-intensity activity done

Figure 4.19 shows that about 61.4% of the respondents do moderate activity 1-3 days in a week and only 4.3% from them do moderate activity 3-5 days in a week. Moreover, 70.0 respondents responded to the question 28 variable. A minimum value and maximum value of 1.0 and 3.0 respectively was observed. An average age of 1.73 and a standard deviation of 0.95 were also observed.

4.5.6 TIME SPEND DOING MODERATE-INTENSITY ACTIVITY
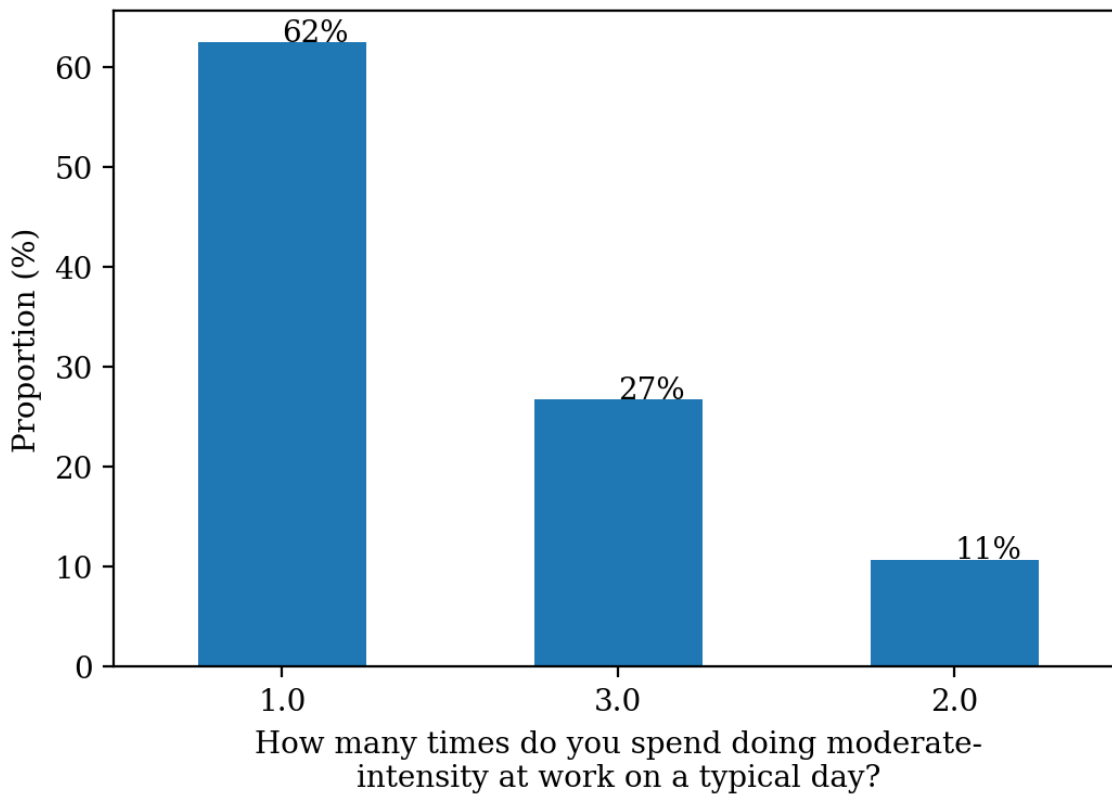
Figure 4.20: Time spent doing moderate-intensity activity

Figure 4.20 shows that 62.1% of respondents do moderate activity 1-3 times in a day. Furthermore, 56.0 respondents responded to the question 29 variable. A minimum value and maximum value of 1.0 and 3.0 respectively was observed. An average age of 1.64 and a standard deviation of 0.88 were also observed.

4.5.7 PHYSICAL ACTIVITY INDEX

There was a minimum and maximum value of 1.0 and 3.0, respectively. There was also an average age of 1.86 and a standard deviation of 0.96, with 19.0 respondents responding to the question 35 variable. There was a minimum and maximum value of 1.0 and 2.0, respectively. An average age of 1.32 and a standard deviation of 0.48 were also observed. Furthermore, 109.0 respondents responded to question 37 variable. A minimum value and maximum value of 1.0 and 3.0 respectively was observed. An average age of 1.9 and a standard deviation of 0.94 were also observed. Moreover, 336.0 respondents responded to question 38 variable. A minimum value and maximum value of 1.0 and 6.0 respectively was observed. An average age of 4.06 and a standard deviation of 0.7 were also observed.

TABLE 4.6: PHYSICAL ACTIVITY INDEX

Physical activity index	Sample n=413	
	n	%
Do you walk or use a bicycle (*pedal cycle)* for at least 10 minutes continuously to get to and from places		
Yes	129	52.65%
No	116	47.35%
In a typical week, on how many days do you walk or bicycle for at least 10 minutes continuously to get to and from places		
1-3	55	47.0%
3-5	24	20.5%
5-7	37	31.6%
How much time do you spend walking or bicycling for travel on typical days		
10-30	85	73.9%
30-50	17	14.8%
50-70	13	11.3%
Do you do any vigorous-intensity sports, fitness or recreational (leisure)		
Yes	38	16.52%
No	192	83.48%
In typical week, on how many days do you do vigorous-intensity sports, fitness or recreation (*leisure)* activities		
1-3	13	68.4%
3-5	6	31.6%
5-7	-	-
How much time do you spend doing vigorous-intensity sports, fitness or recreational activities on a typical day		
10-30	13	68.4%
30-50	6	31.6%
50-70	-	-
How many times do you usually spend sitting or reclining on a typical day		
1-3	54	50.%
3-5	12	11.0%
5-7	43	39.0%
exercises on a regular basis		
Jog	4	1.0%
Swim	10	3.0%
Walk	287	85.4%
Run	17	5.1%
Other, specify	18	5.4%
For how long do you exercise regularly		
Days	167	47.18%
Weeks	103	29.1%
Months	18	5.5%
Would you say you are physically more active, less active, or about as active as other person's your age		
More	371	92.52%
Less	30	7.48%
Same	-	-

Table 4.6 also shows the distribution of physical activity index among the hypertensive patients studied. The majority of the respondents (n = 129; 52.65%) walked or rode a bicycle for at least 10 minutes continuously to get to and from places, while the remaining 47.35% (n = 116) did not. The question 31 variable received 117.0 responses from the respondents. There was a minimum and maximum value of 1.0 and 5.0, respectively. There was also an average age of 1.87 and a standard deviation of 0.92. Furthermore, 115.0 of the respondents responded to question 32. There was a minimum and maximum value of 1.0 and 30.0, respectively. An average age of 2.38 and a standard deviation of 5.31 were also observed. Furthermore, the majority of respondents (n = 192; 83.48%) engage in vigorous-intensity sports, fitness, or recreational (leisure) activities that cause large increases in breathing or heart rate for at least 10 minutes continuously, such as running or football, while the remaining 16.52% (n = 38) do not. Furthermore, 21.0 respondents responded to question 34.In addition, 213 (65.54%) of the respondents ride a bicycle, 90 (27.69%) of the respondents jog, 18 (5.54%) of the respondents swim, 2 (0.62%) of the respondents run and 2 (0.62%) of the respondents walk. The respondents that exercise in days were 167 and accounted for 47.187 while those who exercise in months and weekly accounted for 29.1% (n = 103) and 29.1% (n= 103) respectively. Moreover, 371 (92.52%) respondents reported to be physically active than individuals of their age while 30 (7.48%) respondents were less active.

4.6 BODY MASS INDEX

Height was measured using a stadiometer. Weight was measured using an electronic weighing machine. BMI was calculated by using formula weight (kg)/height2 (m) and individuals were classified as overweight, obese and normal weight according to World Health Organisation (WHO) classification.
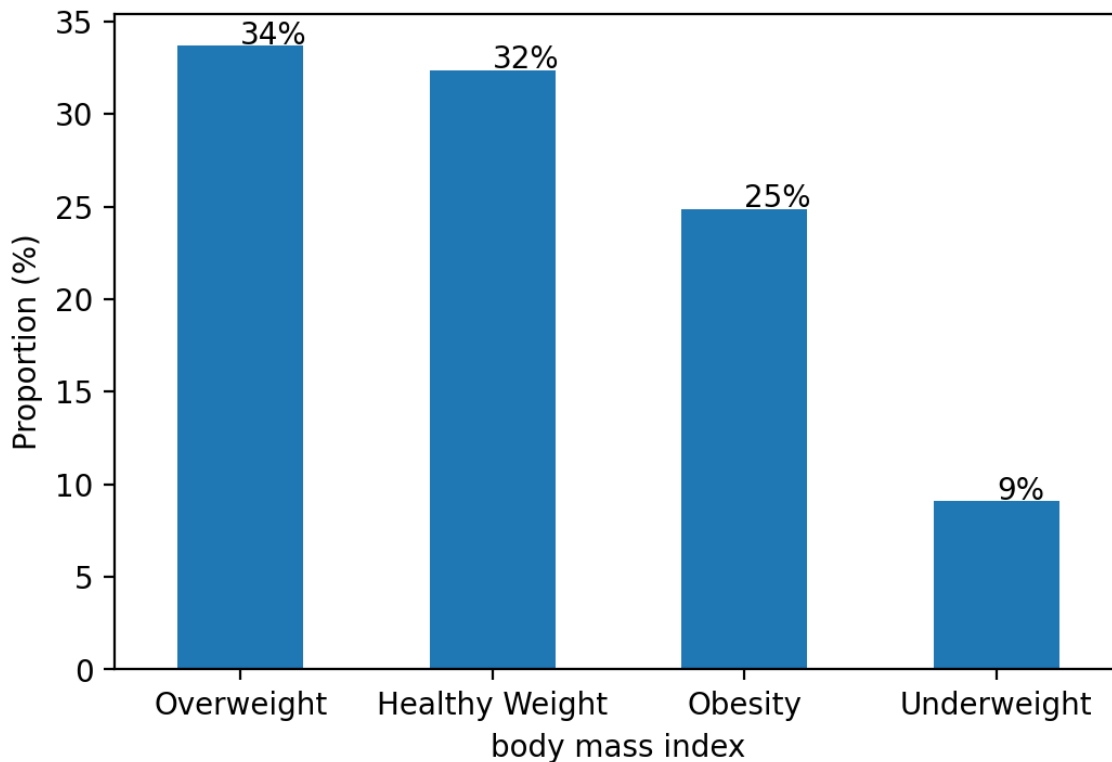
Figure 4.21: Participant body mass index

Figure 4.21 reflects respondent's body mass index. Weight and height were taken to assess body max index of the respondents, majority of the respondents (n = 126; 33.69%) were overweight, followed by healthy weight (n = 121; 32.35%), 24.87% (n = 93) were obese and 9.09% (n = 34) were underweight. Since the majority of the respondents do not engage in physical activity, there is a significant prevalence of overweight and obesity. Furthermore, this must be owing to the fact that they consume an excessive quantity of fats and sugar; according to WHO (2010), high consumption of energy foods, such as processed foods high in fats and sugar, promote obesity.

4.7 DIETARY INTAKE

Diary intake variable was also included to study lifestyle behaviour of hypertensive patients. About 59.0% of the respondents eat breakfast 4-7 times in a week while 31.8% eat breakfast 1-3 times in a week and only 9.2% of the respondents never eat breakfast. Moreover, 95.1% of the respondents eat breakfast from home while 4.9% eat breakfast at work. Furthermore, the results show that 69.9% of the respondents skip meals while 30.1% do not skip meals; moreover, 47.5% of the respondents skip lunch, while 44.3% of the respondents skip breakfast and only 8.2% skip supper.

TABLE 4.7: DIETARY INTAKE

Dietary intake	sample (n=413)	
	n	%
Do you eat breakfast every day		
Yes	371	92.5%
No	30	7.5%
how often do you eat breakfast in a week		
1-3 times	366	1.8%
4-7 times	102	59.0%
Never	16	9.2%
Where do you usually eat breakfast		
Home	366	95.1%
work	19	4.9%
Restaurant	-	-
Do you skip meals		
Yes	120	30.1%
No	279	69.9%
which meal are you likely to skip		
Breakfast	54	44.3%
Lunch	58	47.5%
Super	10	8.2%
Do you add salt in prepared meals		
Yes	243	61.5%
No	152	38.5%
Do you eat meals while watching TV		
Yes	234	59.1%
No	162	40.9%
how often		
Daily	79	32.4%
Weekly	33	13.5%
Sometimes	132	54.1%
Do you snack		
Yes	222	57.8%
No	161	41.9%
Do you eat fast foods		
Yes	237	61.24%
No	150	38.78%
how often do you eat fast foods		
Daily	29	12.1%
Weekly	35	14.6%
Monthly	175	73.2%

Table 4.7 depicts that majority of the respondents (92.5%) eat breakfast every day while 7.5% do not eat breakfast every day. The fact that 92.5% do take their breakfast showed that the respondents might be aware of the importance of taking meals in the morning,

which is good for their health. This might enable them to take their medications properly. The respondents had a tendency of skipping some meals. In contrast, in cases where meals were not taken to represent that they were eating a balanced diet, as shown in table 4.8 above, 61.24% of the respondents eat predominantly fast food. Social background cultural norms also contribute a lot towards the habit of eating and the kind of diet taken during their breakfast. Some families evade breakfast but adjust their lunch to be taken early. The 7.5% aggregate that do not eat breakfast could be mostly poverty stricken families that did not view meal breaks as important but only needed food for survival.

The high percentage of people who ate breakfast from home denotes that most of the respondents were not working or involved in self-employed activities to survive, which was not the case in this study. That displayed the background and type of the community within this study area.

The importance of educating the community on healthy lifestyle more especially on sticking to dietary intake times came to the fore in this study as demonstrated by the higher percentage of the respondents who usually skipped their meals. Most of the respondents preferred not to miss supper. But what could not be determined was whether it was taken at the right time or not.

4.7.1 SUMMARY OF FOOD USED AS SNACK

Respondents were asked to mention food that they snack with, figure 4.22 summarises food that respondents snack with.
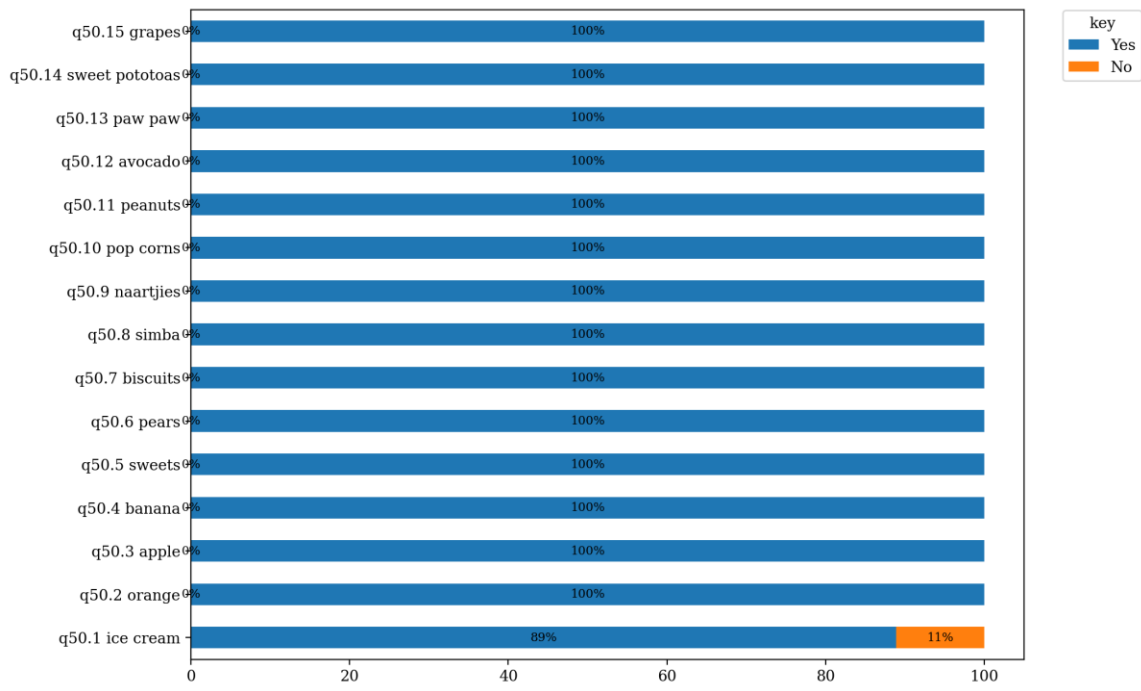
Figure 4.22: Summary of food used as snack
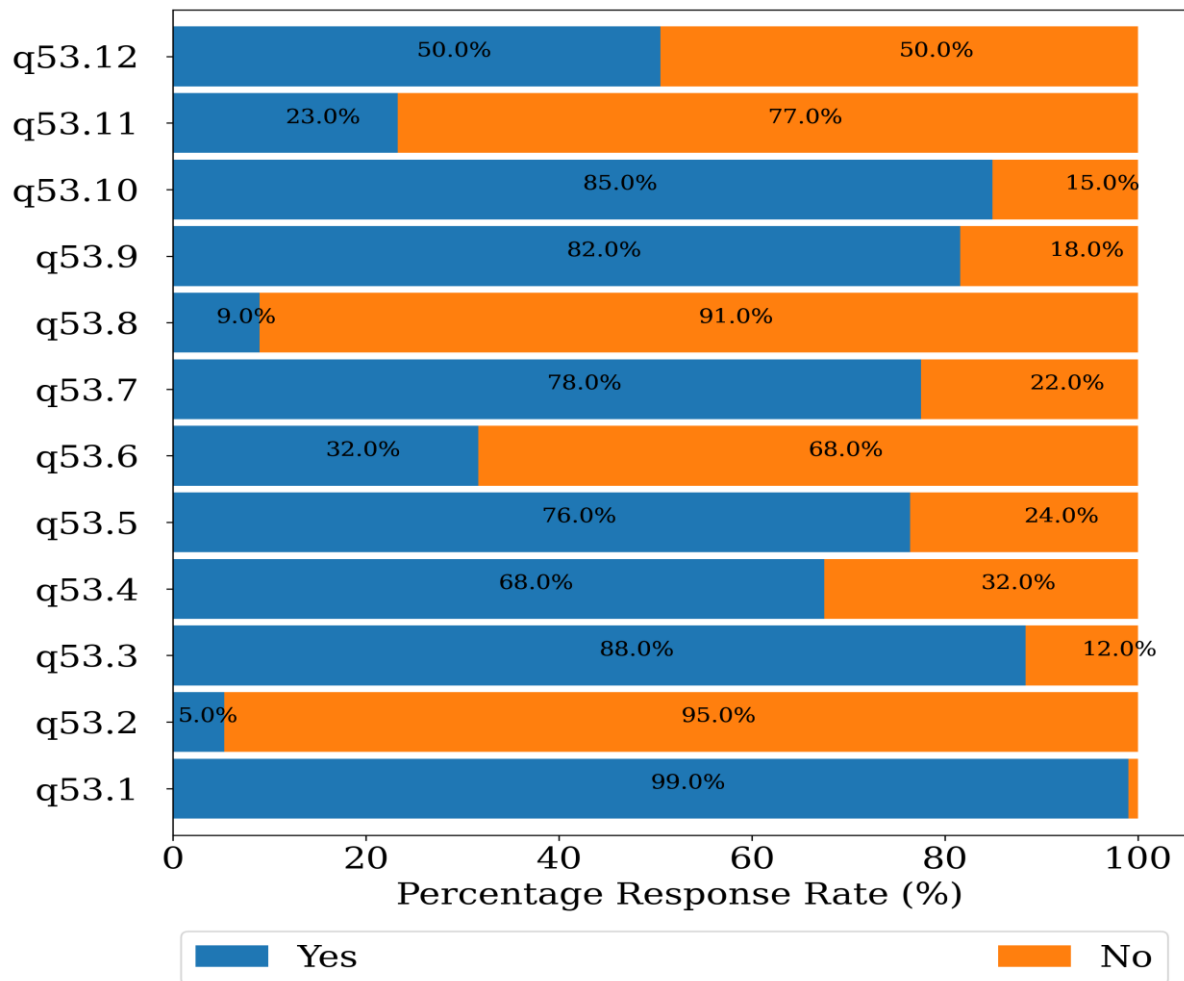
Figure 4.23: Response rate

58
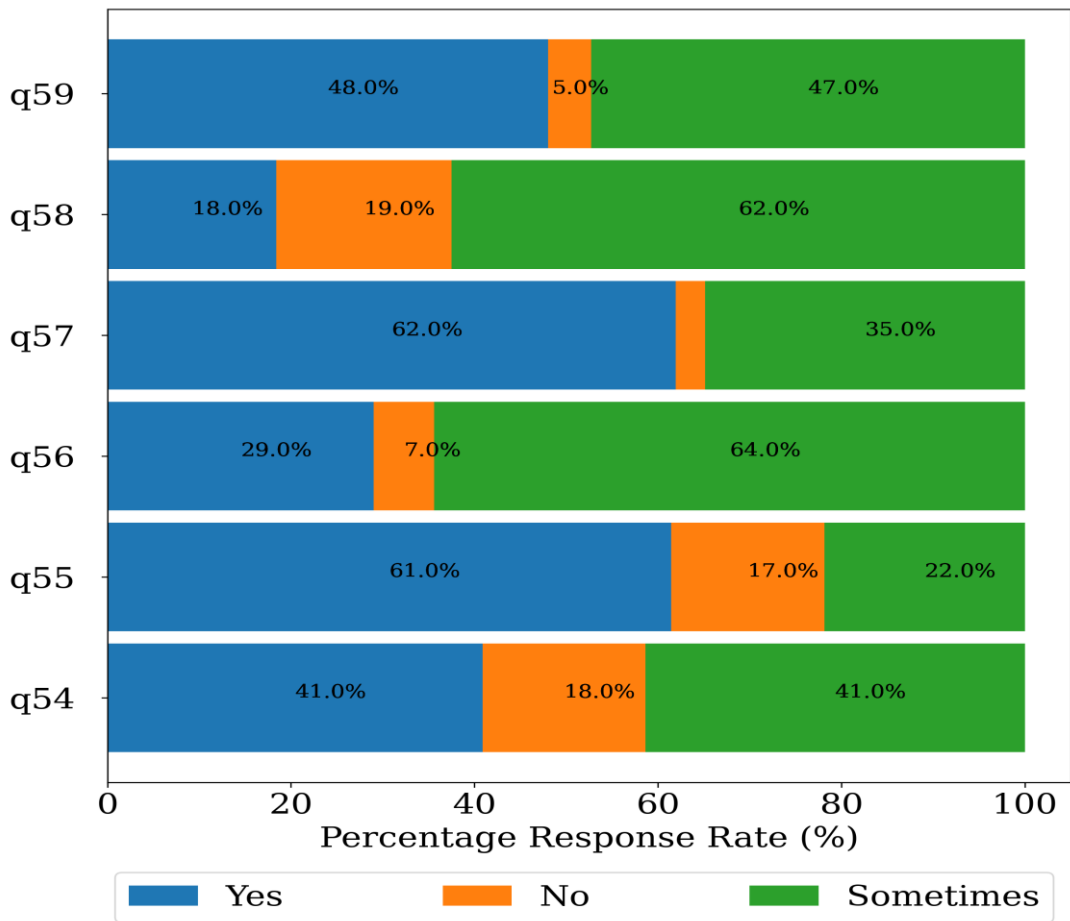
Figure 4.24: Response rate
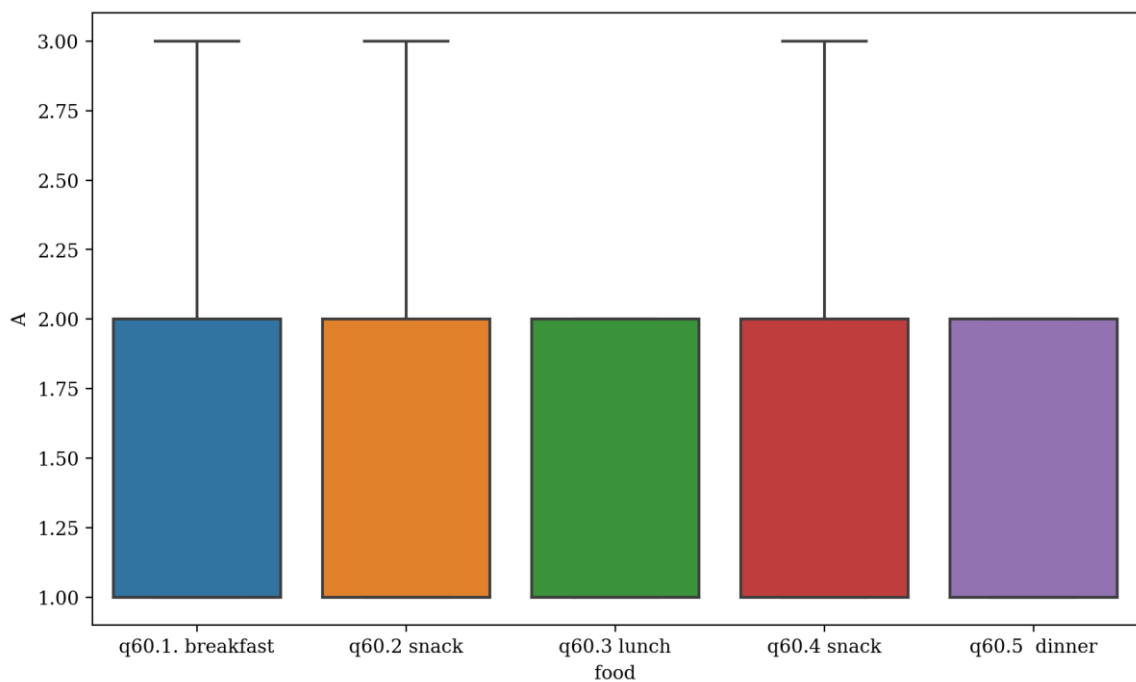
Figure 4.25: 24-hour recall
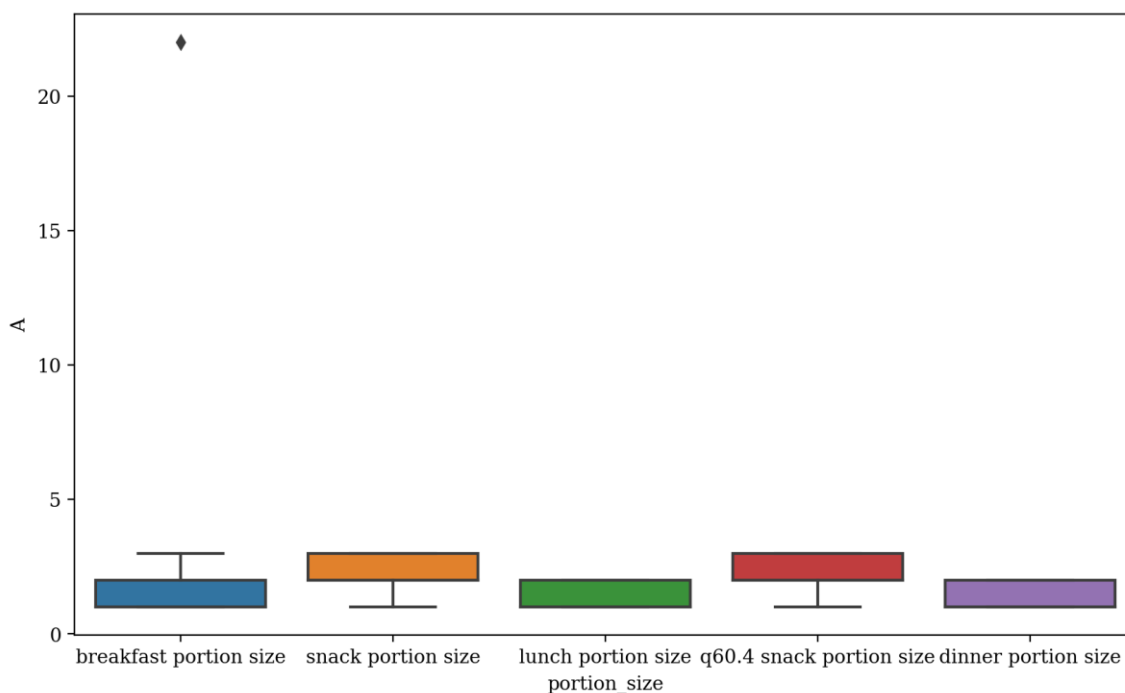
Figure 4.26: Portion size

4.8 DISCUSSION OF THE STUDY FINDINGS

The study results presented underneath are according the study objectives and literature control was also done after discussion of the findings.

4.8.1 ALCOHOL CONSUMPTION

The findings of this study indicated that the majority of the respondents (n = 361; 91.39%) did not consume alcohol while the remaining 8.61% (n = 34) consume alcohol. In addition, the fact that the majority of the respondents did not consume alcohol might either be attributed to the high level of unemployment and lack of financial muscles. However, good as it is, there was no evidence of awareness in terms of how it impacted their hypertensive condition. According to Chinwong, Mookmanee, Chongpornchai and Chinwong (2018: 1), men consume more alcohol than women. Moreover, excessive alcohol intake may be contributing significantly to energy intake and may eventually facilitate weight gain in particular (Puddey, Mori, Barden, and Beilin, 2019). The current study further revealed that 34 (5.9%) of the respondents consumed alcohol every day while 20.6% consumed alcohol 3.5 times in a week.

Furthermore, with regards to consuming alcohol, 95% of the respondents were aged between 4.62 and 42.61 years (95 percent CI: (4.62, 42.61) and the reasons for starting at a young age were peer pressure, curiosity, and boredom. Moreover, the most

consumed type of alcohol were beer and traditional beer. Beers are associated with pride and fame while traditional beer is usually associated with unsophisticated and primitive behavioural lifestyle. In addition, beer contains lots of calories and if a person had consume lot of calories and did not engage in exercise can lead to obesity which will lead to non-communicable diseases. Furthermore, beer contains a lot of calories, and consuming a lot of calories without exercising can lead to obesity, which can lead to non-communicable diseases. Tsuruta et al. (2016) has indicated that the increase in blood pressure can be related to the amount of pure alcohol consumed regardless of the type of beverages consumed and binge drinking increases ambulatory blood pressure risk of cardiovascular mortality and occasional binge drinking of 4 or more glasses per occasion may increases NCDs. Since the majority of the respondents were unemployed, it provided them with an inexpensive option to sit and socialize. Furthermore, it is possible that alcohol consumption education and understanding of healthy lifestyle choices would have enabled them to make better health choices.

4.8.2 TOBACCO USE

The fact that the majority of the hypertension patients in the study did not use tobacco might be ascribed to the high degree of unemployment and lack of financial muscle. Only 8.22% of the hypertensive patients in the study indicated that they used tobacco, while 91.78% did not. However, as good as it is, there was little evidence of knowledge of how their hypertension condition was impacted. Chances are that smoking had no effect on their illness, but on the plus side, the individuals were spared the negative effects that smoking could have on their lives and health in general. According to Liu, Zhang, Yang, Li, Wang, Huang, Wang, Chen, and Zhou (2017:154), the prevalence of smoking remains higher among males than females because male and female perceptions about smoking, as well as social acceptability of smoking, differ. Furthermore, according to Liu, Zhang, Yang, Li, Wang, Huang, Wang, Chen, and Zhou (2017:154), women are less likely to smoke, partly because smoking among women is considered undesirable in society, and males are more likely to believe that smoking makes men look more attractive and that society finds smoking acceptable in men than females.

Tobacco use is one of the leading preventable causes of premature death worldwide (Liu, Zhang, Yang, Li, Wang, Huang, Wang, Chen, and Zhou (2017:154). Furthermore, nearly 6 million individuals die each year as a result of tobacco usage, including both direct and second-hand smoking (Thakur et al., 2011). The current study revealed that majority of

the respondents (n=24; 75.0%) smoke 1-5 times per day, followed by 6-10 times per day (n=7; 21.88%) while the remaining 21.88 % (n=7) smoke 6-10 times per day. Furthermore, the majority of the respondents (n = 23; 71.88%) had been smoking for 5 years or more, followed by 1-2 years (n = 6; 18.75%), and finally 1-2 years (n = 6) for the remaining 18.75% (n = 6). This contributes to the fact that the majority of hypertension patients who smoke have done so for a long time.

4.8.3 PHYSICAL INACTIVITY

The majority of the respondents (n=238; 83.8%) do not engage in vigorous-intensity activities, while the remaining 16.2% do w which contributes to the fact that many hypertension patients are physically inactive. Furthermore, of the 413 respondents, 189 (73.26%) of the respondents do not participate in moderate-intensity exercises, whereas the remaining 26.75% do. This indicates that only a small percentage of hypertension patients engage in moderate-intensity activities. This could be due to a lack of health education and ignorance, but the nature of the respondents' living environment also had a role, as the study was done in a primarily rural area. Females had a much higher rate of physical inactivity (70.8%) than males (40.7%), Maimela (2016). According to Ram et al, men and women's sedentary lifestyles contribute to a high prevalence of overweight and obesity, which puts them at risk for noncommunicable diseases.

The study further revealed that the majority of the respondents (n = 129; 52.65%) walk or ride a bicycle to get to and from places, while the remaining 47.35% (n = 116) did not ride a bicycle for at least 10 minutes continuously to get to and from places, with 117 of the 413 respondents responding to this variable. The large number of physically inactive individuals is due to a lack of safe outdoor playgrounds (Khuwaja et al., 2010). In addition, (Khuwaja et al., 2010) suggested that a lack of awareness of the benefits of physical activity and a failure to prioritize it could be another factor. Furthermore, the high incidence of physically inactive women may be attributable to the fact that, in our society, ladies are generally not permitted to leave the house and engage in regular exercise/walking for cultural reasons (Khuwaja et al., 2010).

According to the findings, respondents in this study were less worried about their physical activities as a vital component of a healthy lifestyle behavior. This is similar to the findings of a study by Nyberg, Batty, Pentti, Virtanen, Alfredsson, Fransson, Goldberg, Heikkilä, Jokela, Knutsson, and Koskenvuo (2018:490), which found that physical inactivity

increases the risk of a variety of adverse health conditions, including major non-communicable diseases like coronary heart disease, type 2 diabetes, breast and colon cancer, and shortens life. According to a WHO study published in 2016, individuals who do not engage in enough physical exercise had a higher risk of death from any cause than those who engage in at least 30 minutes of physical activity each week. Physical exercise reduces the risk of hypertension, stroke, and depression; it is also a primary predictor of energy expenditure, making it essential for energy balance and weight management (WHO, 2018).

4.8.4 BODY MASS INDEX

According to the study findings, majority of the respondents (n = 126; 33.69%) were overweight, whereas 93 of the respondents were obese. According to a study conducted by Srivastav et al. (2017), 19.5% of males and 30.8% of females were determined to be overweight. Since the majority of the respondents do not engage in physical activity, there is a significant prevalence of overweight and obesity. Furthermore, this must be owing to the fact that they consume an excessive quantity of fats and sugar; according to WHO (2017), high consumption of energy foods, such as processed foods high in fats and sugar, causes obesity. The ecology in South Africa has clearly altered over the previous few decades, but there are numerous possibilities to consume energy-dense foods (Motadi, Veldsman, Mohlala and Mabapa, 2018:102). Today, fast food restaurants that sell greasy burgers, chips and sugary drinks are found at most intersections in every town around Limpopo Province. These fast-food outlets make it hard for people to plan their meals ahead and work or even shop because of the availability and accessibility. However, majority of the respondents did not eat fast foods.

The increased prevalence could be related to dietary changes observed in South Africa, such as a shift from low fat to typical westernized high fat diets, as well as market liberalization, which allows people to access fast food as a result of market globalization, resulting in a shift in dietary patterns. Obesity can be caused by the low cost of fast food, the availability of unhealthy snacks, and a lack of physical activity (Riyami et al., 2015). Furthermore, according to WHO (2018), obesity is linked to an increased risk of hypertension, as well as many non-communicable diseases like diabetes, heart disease, stroke, and cancer. They go on to say that a shift in eating habits toward diets high in energy dense foods, high in fats and sugar, and less physical activity due to the sedentary nature of many types of work and modes of transportation, contribute significantly to the

rise in obesity. The study has revealed that majority of the respondents (n = 126; 33.69%) were overweight, followed by healthy weight (n = 121; 32.35%) then 24.87% (n = 93) were obese and lastly 9.09% (n = 34) were underweight.

4.8.5 DIETARY INTAKE

According to the findings of the study, approximately half of the respondents (41%) choose a low-fat, low-saturated-fat, and low-cholesterol diet, 41.0% do not pick a low-fat, low-saturated-fat, and cholesterol diet, and only 18.0% choose it occasionally. Furthermore, more than half of the respondents (61.0%) limit high-sugar foods, while 17.0% do not. The increased consumption of fats can be impacted by the nutritional shift, in which people migrate away from traditional staple foods and towards a western diet rich in fats and salts. According to Beagleno (2011), meals heavy in saturated fats, industrially generated trans fats, and sugar are responsible for 40% of all NCD deaths, while salt overconsumption is responsible for up to 30% of all causes of hypertension. According to the World Health Organization (WHO), eating a high-salt diet raises blood pressure and increases the risk of heart disease and stroke.

WHO recommends a daily salt intake of less than 5 grams per person for cardiovascular disease prevention (Rosi, Paolella, Biasini, Scazzina, Alicante, De Blasio, dello Russo, Rendina, Tabacchi, Cairella, and Garbagnati, 2019:544). Hyseni, Elliot-Green, Lloyd-Williams, Kypridemos, O'Flaherty, McGill, Orton, Bromley, Cappuccio, and Capewell (2017) found that most populations use far more salt than what is advised. According to Hyseni, Elliot-Green, Lloyd-Williams, Kypridemos, O'Flaherty, McGill, Orton, Bromley, Cappuccio, and Capewell (2017), reducing dietary salt intake from current global levels of 9-12 grams per day to the recommended level of 5 grams per day would have a significant impact on lowering blood pressure and cardiovascular diseases. Dietary changes have been observed in South African adults from low fat diet to typical westernised high fat diet (WHO, 2018:25).

The study further revealed that 62.0% of the respondents consume 3-5 servings of vegetables per day, while 35.0% do not. It also revealed that 64.0% of the respondents ingest 2-4 servings of fruits per day on occasion. Poor dietary quality (high salt intake, high saturated and trans fatty acid intake, low fruit and vegetable consumption) is a major risk factor for NCDs and mortality around the world, and it is one of the top priorities for international action (Lim et al., 2012). Unhealthy dietary patterns,

such as a high energy intake from total fats, excessive use of cooking oil with high saturated fats, high consumption of sugar and sweetened beverages, high intake of dietary salt, and low consumption of fruits and vegetables, contribute to chronic noncommunicable diseases (Malik et al., 2015).

4.9 CONCLUSION

This chapter focused on the discussions of the data that originated from self-administration questions assessing alcohol consumption, dietary intake, physical inactivity and tobacco usage and taking them anthropometric measurements and body mass index.

CHAPTER FIVE

CONCLUSIONS, RECOMMENDATIONS AND LIMITATIONS OF THE STUDY

5.1 INTRODUCTION

Hypertension is a leading, preventable cause of morbidity and premature mortality. This study sought to determine healthy lifestyle-behavior of hypertensive patients at Primary Healthcare facilities in Greater Giyani Sub-District, Mopani District in Limpopo Province of South Africa.This chapter provides the summary of the study and interpretation of the findings. Recommendations drawn from the findings of the study are presented in this chapter for further research. Contributions of the study are outlined and the study limitations are specified.

5.2 THE PURPOSE OF THE STUDY

The purpose of the study was to determine healthy lifestyle-behaviour of hypertensive patients at primary healthcare facilities in Greater Giyani Sub-District, Mopani District in Limpopo Province of South Africa. Healthy lifestyle included BMI index, eating habits, physical activity, smoking and alcohol consumption.

5.3 THE OBJECTIVES OF THE STUDY WERE TO:

- Determine the body mass index (BMI) of hypertensive patients.
- Assess dietary intake of hypertensive patients.
- Assess physical inactivity of hypertensive patients.
- Assess tobacco usage of hypertensive patients.
- Assess the alcohol consumption of hypertensive patients.

5.4 THE RESEARCH DESIGN AND METHODS

The quantitative approach was chosen because the researcher aimed at describing healthy lifestyle-behavior of hypertensive patients at primary healthcare facilities of Greater Giyani sub district, Mopani district of Limpopo province. The study design was quantitative, and it is applicable to phenomenon so that it can be expressed in terms of quantities (Thomas and Mathew, 2020:359). The study utilized a descriptive cross-sectional design. Descriptive cross-sectional study is used to describe characteristics of a population or phenomenon being studied (Thomas and Mathew, 2020:359). The study describes healthy lifestyle-behavior of hypertensive patients. The study quantifies the information obtained after data collection.

5.5 CONCLUSION

Based on the findings of the study, the researcher has concluded that majority of the respondents having hypertension did not consume alcohol and use tobacco. The fact that the majority of the respondents did not consume alcohol might either be attributed to the high level of unemployment and lack of financial muscles. However, good as it is, there was no evidence of awareness in terms of how it impacted their hypertensive condition. Chances were either alcohol did not have a bearing on their condition but on a positive note, the respondents were safe from the impact that alcohol might have on their lives and health conditions in general.

Only a few of the hypertensive patients are involved in moderate intensity activities. This could also be attributed to lack of health education and ignorance, but also the nature of the environment in which the respondents lived had a bearing as the study was conducted in a predominantly rural area.

Majority of the respondents were overweight, followed by healthy weight then obesity and lastly, underweight. The high prevalence of overweight and obesity was caused by majority of the respondents not being physically activity. In addition, this was due to the fact that they are consuming excessive amount of fats and over required amount of sugar, the high consumption of energy foods such as processed foods that are high in fats and sugar promote obesity.

About half of the respondents chose a diet low in fat, saturated fat, and cholesterol, whereas about half do not choose a diet low in fat, saturated fat, and cholesterol and only few sometimes choose. Moreover, more than half of the respondents limits food high in sugar and only few do not limit. The high consumption of fats was influenced by nutrition transition, people move away from traditional staple foods to western diet which contains foods high in fats and salts.

5.6 RECOMMENDATIONS

5.6.1 Practice

The researcher recommends that health care workers should give education on the prevention of inappropriate weight gain and encourage individuals to maintain healthy weight through engaging in physical activity. They should also give education about the

consequences of overweight and obesity. Health care workers should encourage people to engage in physical activity.

5.6.2 Education

The researcher also recommend that health education activities and awareness campaigns about the danger of smoking and alcohol consumption should be given. The researcher also recommends that nutrition education about healthy eating, encouraging the consumption of fruits and vegetables and reduction of foods that contain high fats and salts should be given.

5.6.3 Future research

The researcher recommends that future research could look forward to discover what could be the factors that can encourage the hypertension patients to engage in healthy lifestyle activities and behaviour. Furthermore, future researchers could investigate the barriers that could act as a buffer towards hypertension patients achieving healthy lifestyle. This could compliment this study's findings towards finding relevant solutions towards healthy lifestyles among hypertension patients in South Africa.

5.7 CONTRIBUTION OF THE STUDY

To help the community improve the health education regarding lifestyle behaviour, to prevent the development of diseases of lifestyle and reduce the number of people who become ill to improve survival rates, and to improve the quality of life of people living with the diseases of lifestyle. Furthermore, to help filling the gaps in knowledge and changing the way that healthcare professionals advocate healthy living lifestyle, Moreover the information may also save as a source of reference to other researchers who may be interested to research on the same or related topic.

5.8 LIMITATION OF THE STUDY

The findings of the research may not be generalizable to the entire clinics in SA. Greater Giyani Sub-District is quite a big Sub-District, with so many primary health care facilities, therefore with limited resources like man power, equipment and COVID-19 pandemic, only few primary health care facilities under the selected Sub-District will be considered and a small sample will be used for the study, and this may not truly reflect the distribution of healthy life-style behaviour of hypertensive patients in Greater Giyani Sub-District

therefore the findings can only be generalized in the population from which the sample was taken.

The availability of patients to complete the questionnaire and sign the consent forms at the clinics might be the challenge, therefore some patients will be visited in their homes if need arises, some questionnaires will be sent to the patients through the community health care workers and will be returned to the researcher. The study will only include all hypertensive patients (male and females) that are registered with the selected health care facility of greater Giyani sub-district and have completed the consent forms and questionnaires

5.9 CONCLUSION

In this chapter, discussions of the primary results were presented, and conclusions were reached. The research findings highlighted the lack of physical activity among hypertensive patients which leads to them being obese which leads to a risk of diseases of lifestyle.

LIST OF REFERENCES

Alharahsheh, H.H. and Pius, A., 2020. A review of key paradigms: Positivism VS interpretivism. *Global Academic Journal of Humanities and Social Sciences*, *2*(3), 39-43.

Baharudin, A., Ahmad, M.H., Naidu, B.M., Hamzah, N.R., Zaki, N.A.M., Zainuddin, A.A. and Nor, N.S.M., 2017. Reliability, Technical Error of Measurement, and Validity of Height Measurement Using Portable Stadiometer. *Pertanika Journal of Science & Technology*, *25*(3), 675-685.

Barker, M., Dombrowski, S.U., Colbourn, T., Fall, C.H., Kriznik, N.M., Lawrence, W.T., Norris, S.A., Ngaiza, G., Patel, D., Skordis-Worrall, J. and Sniehotta, F.F., 2018. Intervention strategies to improve nutrition and health behaviors before conception. *The Lancet*, *391*(10132), 1853-1864.

Bhelkar S, Deshpande S, Mankar S, and Hiwarkar P. 2018. Association between Stress and Hypertension among Adults More Than 30 Years: A Case-Control Study. *Natl J Community Med* 9(6):430-433

Beaglone, R., Bonita, R., Horton, R., Adams, C., Alleyne, G., Asaria, P., Baugh, V., Bekedam, H., Billo, N., Casswell, S. and Cecchini, M., 2011. Priority actions for the non-communicable disease crisis. *The Lancet*, *377*(9775), 1431447.

Brink, H. I. 2016. Fundamentals of research methodology for health care professionals. Cape Town. Juta.

Brink, H, Van der Walt, C. and van Rensburg, G. 2012. *Fundamentals of Research Methodology for Health Care Professionals*. 3rd Edition. Juta: Cape town. SA

Chan, Y.M., Aufreiter, S., O'Keefe, S.J. and O'Connor, D.L., 2019. Switching to a fibre-rich and low-fat diet increases colonic folate contents among African Americans. *Applied Physiology, Nutrition, and Metabolism*, *44*(2), 127-132.

Chinwong, D., Mookmanee, N., Chongpornchai, J. and Chinwong, S., 2018. A comparison of gender differences in smoking behaviors, intention to quit, and nicotine dependence among Thai university students. *Journal of addiction*, *2018*.

Connell, J., Carlton, J., Grundy, A., Buck, E.T., Keetharuth, A.D., Ricketts, T., Barkham, M., Robotham, D., Rose, D. and Brazier, J., 2018. The importance of content and face validity in instrument development: lessons learnt from service users when developing the Recovering Quality of Life measure (ReQoL). *Quality of Life Research*, *27*(7), 1893-1902.

Dannels, S.A. 2018. Research design. In *The reviewer's guide to quantitative methods in the social sciences* (pp. 402-416). Routledge.

Department of Health statistics. 2016. *Mopani district.* Pretoria: Government Printers.

Du Plooy-Cilliers, F., Davis, C. and Bezuidenhout, R., 2014. Research matters. *Cape Town: Juta.*

Furman, D., Campisi, J., Verdin, E., Carrera-Bastos, P., Targ, S., Franceschi, C., Ferrucci, L., Gilroy, D.W., Fasano, A., Miller, G.W. and Miller, A.H., 2019. Chronic inflammation in the etiology of disease across the life span. *Nature medicine, 25*(12), 1822-1832.

Garg, A. 2016. Methodology for Research. *Indian J Anaesth*, 60 (9):640-645.

Geldsetzer, P., Manne-Goehler, J., Marcus, M.E., Ebert, C., Zhumadilov, Z., Wesseh, C.S., Tsabedze, L., Supiyev, A., Sturua, L., Bahendeka, S.K. and Sibai, A.M. 2019. The state of hypertension care in 44 low-income and middle-income countries: a cross-sectional study of nationally representative individual-level data from 1· 1 million adults. *The Lancet, 394*(10199), 652-662.

Godos, J., Vitale, M., Micek, A., Ray, S., Martini, D., Del Rio, D., Riccardi, G., Galvano, F. and Grosso, G. 2019. Dietary polyphenol intake, blood pressure, and hypertension: a systematic review and meta-analysis of observational studies. *Antioxidants, 8*(6), 152.

Grillo, A., Salvi, L., Coruzzi, P., Salvi, P. and Parati, G. 2019. Sodium intake and hypertension. *Nutrients, 11*(9), 1970.

Guthold, R., Stevens, G.A., Riley, L.M. and Bull, F.C. 2018. Worldwide trends in insufficient physical activity from 2001 to 2016: a pooled analysis of 358 population- based surveys with 1· 9 million respondents. *The Lancet Global Health 6*(10):1077- 1086.

Given, L.M. 2012. *The sage encyclopedia of qualitative research methods.* United States of America, Serial Analysis Genes Expressions publication.

Haque, M., Islam, T., Rahman, N.A.A., McKimm, J., Abdullah, A. and Dhingra, S. 2020. Strengthening Primary Health-C are Services to Help Prevent and Control Long-Term (Chronic) Non-Communicable Diseases in Low-and Middle-Income Countries. *Risk management and healthcare policy, 13*, 409.

Hatcher, A.M., Gibbs, A., McBride, R.S., Rebombo, D., Khumalo, M. and Christofides, N.J. 2019. Gendered syndemic of intimate partner violence, alcohol misuse, and HIV risk among peri-urban, heterosexual men in South Africa. *Social Science & Medicine*, 112637.

Hyseni, L., Elliot-Green, A., Lloyd-Williams, F., Kypridemos, C., O'Flaherty, M., McGill, R., Orton, L., Bromley, H., Cappuccio, F.P. and Capewell, S. 2017. Systematic

review of dietary salt reduction policies: Evidence for an effectiveness hierarchy. *PloS one*, *12*(5), e0177535.

Kassa, M. and Grace, J. 2019. The global burden and perspectives on non-communicable diseases (NCDs) and the prevention, data availability and systems approach of NCDs in low-resource countries. In *Public Health in Developing Countries-Challenges and Opportunities*. IntechOpen.

Kearney, PM, Whelton, M, Reynolds, K, Munter, P, Whelton, PK. and He, J. 2005. Global burden of hypertension: analysis of worldwide data. 365:217

Khuwaja, A.K. and Kadir, M.M. 2010. Gender differences and clustering pattern of behavioral risk factors for chronic non-communicable diseases: community-based study from a developing country. *Chronic illness*, *6*(3), pp.163-170.

Kumar, R. 2017. Research methodology, A step by step guide for beginners, 3rd edition, Los Angeles, SAGE.

Lee, I.M., Shiroma, E.J., Lobelo, F., Puska, P., Blair, S.N., Katzmarzyk, P.T. and Lancet Physical Activity Series Working Group. 2012. Effect of physical inactivity on major non-communicable diseases worldwide: an analysis of burden of disease and life expectancy. *The lancet*, *380*(9838):219-229.

Polit, D.F and Beck, CT. 2012. *Nursing research: Generating and assessing evidence for nursing practice*. 8th Edition. Philadelphia: Lippincott Williams and Wilkins.

Lee RD and Niemen DC. 2010. *Nutritional Assessment*. 10th edition. McGraw Hill Company

Leedy P.D and Ormrod J.E.2010.Practical research. Pearson custom

Lelong, H., Blacher, J., Baudry, J., Adriouch, S., Galan, P., Fezeu, L., Hercberg, S. and Kesse-Guyot, E. 2017. Individual and combined effects of dietary factors on risk of incident hypertension: prospective analysis from the NutriNet-Santé cohort. *Hypertension*, *70*(4), 712-720.

Liu, S., Zhang, M., Yang, L., Li, Y., Wang, L., Huang, Z., Wang, L., Chen, Z. and Zhou, M. 2017. Prevalence and patterns of tobacco smoking among Chinese adult men and women: findings of the 2010 national smoking survey. *J Epidemiol Community Health*, *71*(2), 154-161.

Lim, S.S., Vos, T., Flaxman, A.D., Danaei, G., Shibuya, K., Adair-Rohani, H., AlMazroa, M.A., Amann, M., Anderson, H.R., Andrews, K.G. and Aryee, M., 2012. A comparative risk assessment of burden of disease and injury attributable to 67 risk factors and risk

factor clusters in 21 regions, 1990–2010: a systematic analysis for the Global Burden of Disease Study 2010. *The lancet*, *380*(9859), pp.2224-2260.

Maimela, E. 2016. Development of an integrated, evidence-based management model for chronic non communicable diseases. University of Limpopo

Malik, V.S., Schulze, M.B. and Hu, F.B. 2015. Intake of sugar-sweetened beverages and weight gain: a systematic review–. *Th American journal of clinical nutrition*, 84(2), 274-288.

Mills, K.T., Stefanescu, A. and He, J. 2020. The global epidemiology of hypertension. *Nature Reviews Nephrology*, *16*(4), 223-237.

Mohajan, H.K. 2017. Two criteria for good measurements in research: Validity and reliability. *Annals of Spiru Haret University. Economic Series*, *17*(4), 59-82.

Monakali, S., Goon, D.T., Seekoe, E. and Owolabi, E.O. 2018. Prevalence, awareness, control, and determinants of hypertension among primary health care professional nurses in Eastern Cape, South Africa. *African journal of primary health care & family medicine*, *10*(1), 1-5.

Motadi, S.A., Veldsman, T., Mohlala, M. and Mabapa, N.S. 2017. Overweight and obesity among adults aged 18–45 years residing in and around Giyani town in Mopani district of Limpopo province, South Africa. *J Nutr Heal Sci*, *5*(1), 102.

Nyberg, S.T., Batty, G.D., Pentti, J., Virtanen, M., Alfredsson, L., Fransson, E.I., Goldberg, M., Heikkilä, K., Jokela, M., Knutsson, A. and Koskenvuo, M. 2018. Obesity and loss of disease-free years owing to major non-communicable diseases: a multicohort study. *The lancet public health*, *3*(10), e490-e497.

Olawuyi, A.T. and Adeoye, I.A. 2018. The prevalence and associated factors of non-communicable disease risk factors among civil servants in Ibadan, Nigeria. *PLoS One*, *13*(9), p.e0203587.

Oliveros, E., Patel, H., Kyung, S., Fugar, S., Goldberg, A., Madan, N. and Williams, K.A. 2020. Hypertension in older adults: Assessment, management, and challenges. *Clinical cardiology*, *43*(2), 99-107.

Park, Y.S., Konge, L. and Artino, A.R. 2020. The positivism paradigm of research. *Academic Medicine*, *95*(5), 690-694.

Parkinson, C.M., Hammond, D., Fong, G.T., Borland, R., Omar, M., Sirirassamee, B., Awang, R., Driezen, P. and Thompson, M. 2009. Smoking beliefs and behavior among youth in Malaysia and Thailand. *American journal of health behavior*, *33*(4), 366-375.

Patel, J.P., Lee, E.H., Mena-Hurtado, C.I. and Walker, C.N. 2017. Evaluation and management of erectile dysfunction in the hypertensive patient. *Current cardiology reports*, *19*(9), 1-11.

Poulter, N.R., Borghi, C., Parati, G., Pathak, A., Toli, D., Williams, B. and Schmieder, R.E. 2020. Medication adherence in hypertension. *Journal of hypertension*, *38*(4), 579-587.

Puddey, I.B., Mori, T.A., Barden, A.E. and Beilin, L.J. 2019. Alcohol and hypertension—new insights and lingering controversies. *Current hypertension reports*, *21*(10), 1-10.

Rahi, S. 2017. Research design and methods: A systematic review of research paradigms, sampling issues and instruments development. *International Journal of Economics & Management Sciences*, *6*(2), 1-5.

Rosi, A., Paolella, G., Biasini, B., Scazzina, F., Alicante, P., De Blasio, F., dello Russo, M., Rendina, D., Tabacchi, G., Cairella, G. and Garbagnati, F. 2019. Dietary habits of adolescents living in North America, Europe or Oceania: A review on fruit, vegetable and legume consumption, sodium intake, and adherence to the Mediterranean Diet. *Nutrition, Metabolism and cardiovascular diseases*, *29*(6), 544-560.

Santos, J.A., Tekle, D., Rosewarne, E., Flexner, N., Cobb, L., Al-Jawaldeh, A., Kim, W.J., Breda, J., Whiting, S., Campbell, N. and Neal, B. 2021. A systematic review of salt reduction initiatives around the world: a midterm evaluation of progress towards the 2025 global non-communicable diseases salt reduction target. *Advances in Nutrition*.

Saunders, M. Lewis, P and Tharnhill, A. 2012. Research methods for business student's 6th edition, person education limited.

Seedat, YK and Rayner, BL. 2012. South Africa Hypertension guideline 2011. *SAMJ* 102(1).

Schoonenboom, J. and Johnson, R.B. 2017. How to construct a mixed methods research design. *KZfSS Kölner Zeitschrift für Soziologie und Sozialpsychologie*, *69*(2), 107-131.

Shimbo, D., Barrett Bowling, C., Levitan, E.B., Deng, L., Sim, J.J., Huang, L., Reynolds, K. and Muntner, P. 2016. Short-term risk of serious fall injuries in older adults initiating and intensifying treatment with antihypertensive medication. *Circulation. Cardiovascular quality and outcomes*, *9*(3), 222-229.

Srivastav, S., Mahajan, H., Goel, S. and Mukherjee, S. 2017. Prevalence of risk factors of noncommunicable diseases in a rural population of district Gautam-Budh Nagar, Uttar Pradesh using the World Health Organization STEPS approach. *Journal of family medicine and primary care*, *6*(3), 491.

Srivastav, S., Mahajan, H., Goel, S. and Mukherjee, S. 2017. Prevalence of risk factors of noncommunicable diseases in a rural population of district Gautam-Budh Nagar, Uttar Pradesh using the World Health Organization STEPS approach. *Journal of family medicine and primary care*, *6*(3), p.491.

Swaminathan, S. and Vaz, M., 2013. Childhood physical activity, sports and exercise and noncommunicable disease: a special focus on India. *The Indian Journal of Pediatrics*, *80*(1), pp.63-70.

Tarcea, M., Fazakas, Z., Szucs, V., Kovacs, Z., Nagy, E.N., Olah, P. and Tilinca, M. 2017. Guiné. (2017) Mean Dietary Fiber Intake of Romanian Adults Results of a Survey Questionnaire. *Revista de chimie*, *68*(9), 2083-2087.

Thakur J. S and Narain J.P. 2011. A major risk factor for non-communicable diseases in Southeast. India *journal* ,55(3), 60-155.

Thomas, V.M. and Mathew, A. 2020. Truth-telling: Apply the principle of beneficence. *Cancer Research, Statistics, and Treatment*, *3*(2), 359.

Tsuruta, M., Adachi, H., Hirai, Y., Fujiura, Y. and Imaizumi, T. 2000. Association between alcohol intake and development of hypertension in Japanese normotensive men: 12-year follow-up study. *American journal of hypertension*, *13*(5), 482-487.

van der Ploeg, H.P. and Hillsdon, M. 2017. Is sedentary behavior just physical inactivity by another name. *International Journal of Behavioral Nutrition and Physical Activity*, *14*(1), 1-8.

Welman, C., Mitchell, B. and Kruger, F. (2005*). Research methodology, 3rd edition*. Cape Town: Oxford University Press.

World Health Organization. 2014. *Global status report on noncommunicable diseases 2014* (No. WHO/NMH/NVI/15.1). World Health Organization.

World Health Organization. 2014. *Global status report on noncommunicable diseases 2014* (No. WHO/NMH/NVI/15.1). World Health Organization.

World Health Organization. 2015. *Guideline: sugars intake for adults and children*. World Health Organization.

World Health Organization. 2016. Final report of the Commission on Ending Childhood Obesity

World Health Organization. 2016. Assessing national capacity for the prevention and control of noncommunicable diseases: report of the 2015 global survey.

World Health Organization. 2017. *Guideline: assessing and managing children at primary health-care facilities to prevent overweight and obesity in the context of the double burden of malnutrition*. World Health Organization.

World Health Organization. 2017. *Guideline: assessing and managing children at primary health-care facilities to prevent overweight and obesity in the context of the double burden of malnutrition*. World Health Organization.

Zhao, F., Liu, Q., Li, Y., Feng, X., Chang, H. and Lyu, J. 2020. Association between alcohol consumption and hypertension in Chinese adults: findings from the CHNS. *Alcohol*, *83*, 83-88.

Annexure A: Ethical Clearance Certificate of UNISA to grant proposal approval

UNISA | university of south africa

COLLEGE OF HUMAN SCIENCES RESEARCH ETHICS REVIEW COMMITTEE

14 December 2020

Dear Azwindini Zaida Ndalani

| NHREC Registration # : |
| Rec-240816-052 |
| CREC Reference # : |
| 2020-CHS -69752753 |

Decision:
Ethics Approval from 14 December 2020 to 31 November 2023

Researcher(s): Azwindini Zaida Ndalani   (69752753@mylife.unisa.ac.za)

Supervisor: PROF.P.R. RISENGA   (012-429 6769)

Title: *HEALTHY LIFESTYLE-BEHAVIOUR OF HYPERTENSIVE PATIENTS AT PRIMARY HEALTH CARE (PHC) FACILITIES OF GREATER GIYANI SUBDISTRICT, MOPANI DISTRICT, LIMPOPO PROVINCE*

Degree Purpose: MPH

Thank you for the application for research ethics clearance by the Unisa College of Human Science Ethics Committee. Ethics approval is granted for three years.

The *medium risk application* was *reviewed* by College of Human Sciences Research Ethics Committee, on **14 December 2020** in compliance with the Unisa Policy on Research Ethics and the Standard Operating Procedure on Research Ethics Risk Assessment.

The proposed research may now commence with the provisions that:

1. The researcher(s) will ensure that the research project adheres to the values and principles expressed in the UNISA Policy on Research Ethics.
2. Any adverse circumstance arising in the undertaking of the research project that is relevant to the ethicality of the study should be communicated in writing to the College Ethics Review Committee.
3. The researcher(s) will conduct the study according to the methods and procedures set out in the approved application.

Open Rubric

4. Any changes that can affect the study-related risks for the research participants, particularly in terms of assurances made with regards to the protection of participants' privacy and the confidentiality of the data, should be reported to the Committee in writing, accompanied by a progress report.

5. The researcher will ensure that the research project adheres to any applicable national legislation, professional codes of conduct, institutional guidelines and scientific standards relevant to the specific field of study. Adherence to the following South African legislation is important, if applicable: Protection of Personal Information Act, no 4 of 2013; Children's act no 38 of 2005 and the National Health Act, no 61 of 2003.

6. Only de-identified research data may be used for secondary research purposes in future on condition that the research objectives are similar to those of the original research. Secondary use of identifiable human research data require additional ethics clearance.

7. No fieldwork activities may continue after the expiry date **(31 November 2023).** Submission of a completed research ethics progress report will constitute an application for renewal of Ethics Research Committee approval.

Note:

*The reference number **2020-CHS-69752753** should be clearly indicated on all forms of communication with the intended research participants, as well as with the Committee.*

Yours sincerely,

Signature :

Dr. K.J. Malesa
CHS Ethics Chairperson
Email: maleskj@unisa.ac.za
Tel: (012) 429 4780

Signature : PP

Prof K. Masemola
Executive Dean : CHS
E-mail: masemk@unisa.ac.za
Tel: (012) 429 2298

Annexure B: Permission from Limpopo Province Department of Health.

LIMPOPO
PROVINCIAL GOVERNMENT
REPUBLIC OF SOUTH AFRICA

Department of Health

Ref	:	LP_2021-05-003
Enquires	:	Ms PF Mahlokwane
Tel	:	015-293 6028
Email	:	Phoebe.Mahlokwane@dhsd.limpopo.gov.za

Ndalani Azwindini zaida

PERMISSION TO CONDUCT RESEARCH IN DEPARTMENTAL FACILITIES

Your Study Topic as indicated below;

Healthy lifestyle-behaviour of hypertensive patients at primary health care (phc) facilities of greater Giyani sub district, Mopani district, Limpopo province

1. Permission to conduct research study as per your research proposal is hereby Granted.
2. Kindly note the following:
    a. Present this letter of permission to the institution supervisor/s a week before the study is conducted.
    b. In the course of your study, there should be no action that disrupts the routine services, or incur any cost on the Department.
    c. After completion of study, it is mandatory that the findings should be submitted to the Department to serve as a resource.
    d. The researcher should be prepared to assist in the interpretation and implementation of the study recommendation where possible.
    e. The approval is only valid for a 1-year period.
    f. If the proposal has been amended, a new approval should be sought from the Department of Health
    g. Kindly note that, the Department can withdraw the approval at any time.

Your cooperation will be highly appreciated

pp**Head of Department**

08/06/2021

Date

Private Bag X9302 Polokwane
Fidel Castro Ruz House, 18 College Street. Polokwane 0700. Tel: 015 293 6000/12. Fax: 015 293 6211.
Website: http/www.limpopo.gov.za
The heartland of Southern Africa - Development is about people!

79

Annexure C: Permission from Mopani District Department of Health

LIMPOPO
PROVINCIAL GOVERNMENT
REPUBLIC OF SOUTH AFRICA

DEPARTMENT OF HEALTH
MOPANI DISTRICT

Ref No: S4/2/2
Enquiries: S Chuma
Tel Direct: 015 811 6633
Email address: Shadrack.Chuma@dhsd.limpopo.gov.za

To: **Ms. Ndalani Azwindini Zaida**
            P.O.Box 805
            Vuwani
            0952

PERMISSION TO CONDUICT RESEARCH IN THE DEPARTMENT HEALTH FACILITY OF MOPANI DISTRICT: YOURSELF

1. Your letter received on the 11 June 2021 has reference.
2. This serves to inform you that permission is granted to your request to conduct research on **"Healthy lifestyle behaviour of hypertensive patients at Primary Health Care facilities of Greater Giyani Sub-District, Mopani District, Limpopo Province"**
3. The approval is valid for a period of one year.
4. You will be required to furnish the Managers/Operational Managers of the facilities of your choice with this letter for the purposes of access and assistance.
5. You are further expected to abide by all prescripts governing public service during the course of your research.
6. Thanking you.

....
ACTING DIRECTOR: CORPORATE SERVICES

2021/06/08
....
DATE

Private Bag X628, GIYANI, 0826
Tel: 015 811 6500 Fax: (015) 812 3162 Website: http://www.limpopo.gov.za

Annexure D: Consent form

CONSENT FORM FOR PARTICIPANT

TITLE OF THE STUDY: HEALTHY LIFESTYLE-BEHAVIOUR OF HYPERTENSIVE PATIENTS AT PRIMARY HEALTH CARE (PHC) FACILITIES OF GREATER GIYANI SUB-DISTRICT, MOPANI DISTRICT, LIMPOPO PROVINCE.

Researcher: Ndalani AZ

University of South Africa

I, Ndalani AZ (researcher) hereby request your consent to participate in my study. I am currently a registered student for master's in public health at the University of South Africa. As part of the curriculum, it is expected of me to do a research project. The aim of the study is to determine healthy lifestyle-behavior of hypertensive patients at primary healthcare facilities in Greater Giyani Sub-District, Mopani District in Limpopo Province of South Africa.

Participation in this study is voluntary and you are allowed to withdraw at any stage. I guarantee you that the information you will provide will remain confidential. There will be no adverse consequences to you from your participation in this study.

If you agree to participate, you are expected to present your daily experiences in relation to hypertension and outline all the challenges that you are experiencing on a daily basis in line with questions that are reflected on the questionnaires that will be provided. You will be required to complete the questionnaire on your own.

I ……………...………………………….…… agree to participate in this study.

Participant's name

The study procedures have been explained to me by the researcher. I hope that participation in this study may help to increase my knowledge on healthy lifestyle. I also acknowledge the fact that participation is voluntary and the information I will provide will remain confidential. Any questions that I may have regarding the research will be answered by the researcher.

Signed at ……………………………………... on this day...……... of ……………….…… 2020.

_____

Participant's signature

_____   _____

Researcher's signature   Date

QUESTIONNAIRE

TITLE: HEALTHY LIFESTYLE-BEHAVIOUR OF HYPERTENSIVE PATIENTS AT PRIMARY HEALTH CARE (PHC) FACILITIES OF GREATER GIYANI SUB-DISTRICT, MOPANI DISTRICT, LIMPOPO PROVINCE.

RESEARCHERS: NDALANI AZ

                             UNIVERSITY OF SOUTH AFRICA

Thank you note

I like to thank you for agreeing to participate in this study. The information that you will provide will remain confidential. There will be no adverse consequences to you from your participation in this study. There is no wrong or write answer. You are requested to complete the questionnaire and feel free to ask where you do not understand.

Instructions

The questionnaire consists of six sections which are as follows:

       Section A: Socio-demographic information

       Section B: Alcohol consumption

       Section C: Tobacco usage

       Section D: Physical activity level

       Section E: Dietary intake

Complete all the sections and do not leave any question unanswered. Mark with an X on the appropriate box on the close-ended questions and fill in the dotted lines for open-ended questions.

For office use only:	Name of the clinic: …………………………………………………………… …… Clinic code: ………………………………………………………… …………… patient code: ………………………………………………………… …………..

Date of completion: yyyy……………… mm…………………… dd………………………		

SECTION A: SOCIO-DEMOGRAPHIC INFORMATION

1. Gender

Male	1	
Female	2	

2. Date of birth:

   YYYY...................MM.........................DD................

3. Marital status

Married	1	
Single	2	
Divorced	3	
Widowed	4	

4. Which ethnic group do you belong to?

Venda	1	
Tsonga	2	
Sepedi	3	
Other, specify	4	

5. Educational level

Primary	1	
Secondary	2	
Tertiary	3	
Never attend	4	

6. How many people are you staying with at home?

   ……………………………………………………………………………………………

7. Who is the breadwinner?

My self	1	
Mother	2	
Father	3	

Grandparents	4	
Sister/brother	5	
Other, specify	6	

8. Employment status of the breadwinner

Unemployed	1	
Employed	2	

9. Anthropometric measurements

Weight …………………….1 ……………… 2……………….3…………

Height…………………….1………………… 2……………..3………….

BMI…………………………….

SECTION B: ALCOHOL CONSUMPTION

10. Do you drink alcohol?

Yes	1	
No	2	

11. What kind of alcohol do you mostly consume?

Traditional beer	1	
Wine	2	
Whiskey	3	
Beer	4	

12. At what age did you start consuming alcohol?

13. Why did you start consuming alcohol?

Pressure	1	
Curiosity	2	
Boredom	3	
Other, specify	4	

14. Have you ever used alcohol in the past month?

Yes	1	

No	2	

15. How many drinks did you have during that time?

0	1	
1-2	2	
3-4	3	
5-6	4	
7 and above	5	

16. How often do you drink?

Everyday	1	
3-5 times a week	2	
Once a week	3	
Only on weekends	4	
Occasionally	5	

17. Do you engage in binge drinking?

Yes	1	
No	2	

18. Have you ever skipped a meal due to drinking?

Yes	1	
No	2	

19. Have you ever lost appetite due to drinking?

Yes	1	
No	2	

SECTION C: TOBACCO USE

20. Do you smoke tobacco?

Yes	1	
No	2	

21. How often do you smoke tobacco?

Daily	1	
Weekly	2	
Monthly	3	
Occasionally	4	

22. If you use tobacco products daily, how often do you use them per day?

1-5 times per day	1	
6-10 times per day	2	
11-20 times per day	3	
20 times per day and above	4	

23. How many years have you been smoking cigarettes?

0 years	1	
1-2 years	2	
3-4 years	3	
5 years and above	4	

SECTION D: PHYSICAL ACTIVITY LEVEL

I'm going to ask you about the time you spend doing different types of physical activity in a week. Please answer these questions even if you do not consider yourself to be a physically active person.

Think first about the time you spend doing work. Think of work as the things that you do such as paid or unpaid work, study/training, household chores, harvesting food/crops, fishing or hunting for food, seeking employment. In answering the following questions 'vigorous-intensity activities' are activities that require hard physical effort and cause large increases in breathing or heart rate. 'Moderate intensity activities' are activities that require moderate physical effort and cause a small increase in breathing or heart rate.

24. Does your work involve vigorous-intensity activities *(for example, carrying or lifting heavy loads, digging or construction work)* for at least for 10 minutes continuously?

Yes	1	
No	2	

25. In a week, how many days do you do vigorous-intensity activity as part of your work?

```
┌─────────────────────────────────────────────────┐
│                                                 │
└─────────────────────────────────────────────────┘
```

26. How much time do you spend doing vigorous-intensity activities at work on a typical day?

```
┌─────────────────────────────────────────────────┐
│                                                 │
└─────────────────────────────────────────────────┘
```

27. Does your work involve moderate-intensity activity that causes small increases in breathing or heart rate such as brisk walking (*or carrying light loads)* for at least 10 minutes continuously?

Yes	1	
No	2	

28. In a typical week, on how many days do you do moderate-intensity activities as part of your work?

```
┌─────────────────────────────────────────────────┐
│                                                 │
└─────────────────────────────────────────────────┘
```

29. How many times do you spend doing moderate intensity at work on a typical day?

```
┌─────────────────────────────────────────────────┐
│                                                 │
└─────────────────────────────────────────────────┘
```

30. Do you walk or use a bicycle (*pedal cycle)* for at least 10 minutes continuously to get to and from places?

Yes	1	
No	2	

31. In a typical week, on how many days do you walk or bicycle for at least 10 minutes continuously to get to and from places?

```
┌─────────────────────────────────────────────────┐
│                                                 │
└─────────────────────────────────────────────────┘
```

32. How much time do you spend walking or bicycling for travel on typical days?

```
┌─────────────────────────────────────────────────┐
│                                                 │
└─────────────────────────────────────────────────┘
```

33. Do you do any vigorous-intensity sports, fitness or recreational (leisure) activity that causes large increases in breathing or heart rate like *(running or football)* for at least 0 minutes continuously?

Yes	1	
No	2	

34. In typical week, on how many days do you do vigorous-intensity sports, fitness or recreation (*leisure)* activities?

35. How much time do you spend doing vigorous-intensity sports, fitness or recreational activities on a typical day?

36. How much time do you spend doing moderate-intensity sports, fitness or recreational *(leisure)* activities on a typical day?

37. How many times do you usually spend sitting or reclining on a typical day?
`

38. Do you do any of these exercises on a regular basis? If "yes" circle the appropriate letter in the column

Ride a bicycle	1	
Jog	2	
Swim	3	
Walk	4	
Run	5	
Other, specify	6	

39. For how long do you exercise regularly?

Days	1	

Weeks	2	
Months	3	

40. Would you say you are physically more active, less active or about as active as other person's your age?

More	1	
Less	2	
Same	3	

SECTION E: DIETARY INTAKE

41. Do you eat breakfast every day?

Yes	1	
No	2	

42. If not, how often do you eat breakfast in a week?

1-3 times	1	
4-7 times	2	
Never	3	

43. Where do you usually eat breakfast?

Home	1	
work	2	
Restaurant	3	

44. Do you skip meals?

Yes	1	
No	2	

45. If yes, which meal are you likely to skip?

Breakfast	1	
Lunch	2	

Super	3	

46. Do you add salt in prepared meals?

Yes	1	
No	2	

47. Do you eat meals while watching TV?

Yes	1	
No	2	

48. If yes, how often?

Daily	1	
Weekly	2	
Sometimes	3	

49. Do you snack?

Yes	1	
No	2	

50. If yes, what kind of food do you usually snack with?

………
………
………
………
………
……………

51. Do you eat fast foods?

Yes	1	
No	2	

52. If yes, how often do you eat fast foods?

Daily	1	
Weekly	2	
Monthly	3	

53. Daily lifestyle

Lifestyle questions	1. Yes	2. No
Do you prefer home cooked meals?		
Do you prefer take-away food?		
Do you eat breakfast every day?		
Do you eat 3 meals a day at regular times with no snack in between?		
Do you get adequate sleep?		
Have you been able to maintain your body weight at a moderate level during the past 5 years?		
Do you consume 2L of water per day?		
Do you consume a little alcohol?		
Do you consume no alcohol?		
Are you a non-smoker?		
Do you drink soft drinks with meals?		
Do you drink soft drinks in between meals?		

54. Do you choose a diet low in fat, saturated fat, and cholesterol?

Yes	1	
No	2	
Sometimes	3	

55. Do you limit use of sugar and food containing sugar?

Yes	1	
No	2	

Sometimes	3	

56. Do you eat 2-4 servings of fruits each day?

Yes	1	
No	2	
Sometimes	3	

57. Do you eat 3-5 servings of vegetables each day?

Yes	1	
No	2	
Sometimes	3	

58. Do you eat 2-3 servings of milk, yoghurt or cheese each day?

Yes	1	
No	2	
Sometimes	3	

59. Do you eat only 2-3 servings from the meat, poultry, fish, dried beans, eggs, and nuts group each day?

Yes	1	
No	2	
Sometimes	3	

60. 24-hour recall

Serving	Time interval (09h00 to after 20h00)	Portion size
Breakfast		
Snacks		
Lunch		
Snacks		
Dinner		
After dinner		

The End!!!   Thank you!!!

****

93

Annexure F: Application letter for permission to conduct research study in Mopani District Department of Health

<div align="right">
P.O BOX 805

VUWANI

0952
</div>

27 JUNE 2020

     District Executive Manager

     Department of Health

     Limpopo Province

     Private Bag x 9628

     Giyani

     0826

Re: Request for a permission to conduct research

I, Ndalani Azwindini Zaida, student number 69752753, currently a registered student for master's in public health at the University of South Africa hereby request for permission to use all patients diagnosed with hypertension at Greater Giyani Sub-District primary healthcare facilities for research purposes. As part of the curriculum, it is expected of me to do a research project. The title/topic of my research study is: Healthy lifestyle-behavior of hypertensive patients at primary healthcare facilities in Greater Giyani Sub-District, Mopani District in Limpopo Province of South Africa.

The aim of the study is to determine healthy lifestyle-behavior of hypertensive patients at primary healthcare facilities in Greater Giyani Sub-District, Mopani District in Limpopo Province of South Africa.

The respondents are expected to present their daily experiences in relation to hypertension and outline all challenges that they are experiencing on a daily basis in line with questions that are reflected on the questionnaires that will be provided. The PHC facilities will serve as data collection points as patients will be coming in for consultation. Files and records obtained from the facilities will also be perused in order to gather more relevant information.

The researcher will be assessing dietary intake, physical activity, tobacco use and alcohol consumption using questionnaires. Anthropometrics measurement will be taken (weight and height) to determine the body mass index. Individuals who are willing to participate in the study will be given a consent form to sign at the beginning of the research process.

Your approval to conduct this study will be greatly appreciated.

Sincerely

…………………………………..

Ndalani Azwindini Zaida (Researcher)

Contact: 0728027651

………………………

Prof P.R. Risenga (Supervisor)

Tel: 012 429 6769

CELL: 083 3416000

Email: risenpr@unisa.ac.za

Annexure G: Letter from language editor

+27 83 215 6445

Rosemarys.pes@gmail.com

1 Richards drive
Midrand, 1684

**ROSEMARY'S PROOFREADING
& EDITING SERVICES**

09 DECEMBER 2021

To Whom It May Concern:

RE: LANGUAGE EDITING

This letter serves as confirmation that language and technical editing was conducted by Rosemary's Proofreading and Editing Services. Further details of the study and the researcher have been provided below.

TITLE OF THE STUDY: "HEALTHY LIFESTYLE-BEHAVIOUR OF HYPERTENSIVE PATIENTS AT PRIMARY HEALTH CARE (PHC) FACILITIES OF GREATER GIYANI SUBDISTRICT, MOPANI DISTRICT, LIMPOPO PROVINCE".

Researcher: **Ndalani Azwindini Zaida**

Student number: 69752753

Kind Regards

R MALULEKE (CODER & LANGUAGE EDITOR)