



University of Fort Hare

**KNOWLEDGE, ATTITUDE AND BEHAVIOUR OF SECONDARY SCHOOL
LEARNERS TOWARDS HYPERTENSION AND ITS RISKS IN BURGERSFORT,
LIMPOPO, SOUTH AFRICA.**

BY

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Certification

This dissertation titled Knowledge, Attitude and Behaviour of Secondary School Learners towards Hypertension and its Risks in Burgersfort, Limpopo, South Africa, meets the regulations governing the award of the degree of Magister Curationis (Medical Surgical Nursing) of the University of Fort Hare and is approved for its contribution to the scientific knowledge.

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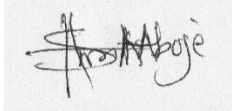
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Dedication

I dedicate my work to my family, who have made tremendous sacrifices for me during this program. Thank you for your love, support, and encouragement. I am grateful and appreciative of your dedication to my success.

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I am deeply grateful to God, for truly, this is HIS work, and all glory belongs to Him.

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ABSTRACT

Hypertension is a growing global health concern affecting both adults and adolescents. Secondary school learners who are a major subgroup of adolescents are particularly vulnerable due to limited awareness and the formation of long-term health behaviours during this developmental stage. Without timely intervention, early risk may lead to the onset of hypertension and associated complications in adulthood.

This study employed a quantitative research approach and descriptive design to assess the knowledge, attitudes, and behaviours related to hypertension among secondary school learners in Burgersfort, Limpopo Province, South Africa. A total of 366 learners were randomly selected from three public secondary schools. Data was collected using a self-developed, structured online questionnaire. A pilot study confirmed the reliability of the instrument, yielding acceptable Cronbach's alpha values for all sections.

Study results revealed significant gaps in secondary school learners' knowledge of hypertension and its risks. Only a small proportion demonstrated accurate understanding of the condition. Attitudes towards hypertension reflected moderate concern, while behavioural practices were generally insufficient to prevent the onset of hypertension. The data suggests disconnection between awareness and health promoting actions among the secondary school learners.

In conclusion, the study underscores the need for comprehensive, school-based health education interventions aimed at improving knowledge, fostering positive attitudes, and encouraging preventive behaviours related to hypertension. Such efforts are essential to decrease the early onset of hypertension and reduce long-term health risks in the secondary school learners' population.

Key words: Knowledge, Attitude, Behaviour, Hypertension, Secondary school learners, Adolescents.

Acronyms

- Att.com – Attitude competency
- Beh.com – Behaviour competency
- CI – Confidence Interval
- Df – Degree of freedom
- DGD – Demographic details
- HIV/AIDS – Human Immunodeficiency Virus/Acquired Immunodeficiency Syndrome
- Knl. com – Knowledge competency
- NCD – Non-Communicable Disease
- TPB – Theory of Planned Behavior
- TMA – Theory of Motivational Action
- TRA – Theory of Reasoned Action
- UK – United Kingdom
- US – United States
- WHO – World Health Organization

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Chapter 1

INTRODUCTION AND BACKGROUND

1.1. Introduction and background

Hypertension is a universal health problem with a global impact that cuts across different segments of the human population. It is a non-communicable disease (NCD) with an affinity for adults and adolescents (Sitaula, Kumar, & Bhattarai, 2022). According to (WHO, 2014), adolescents are 10 - 19 years of age; henceforth, secondary school learners are a subset of the adolescent population engaged in formal education. Most NCDs are linked to behaviours established in adolescence.

A combination of genetic, cardiovascular diseases, patterns of smoking, obesity, eating much and exercising less, consumption of inappropriate quantity of salt in meals, and unhealthy lifestyles are factors increasing cases of adolescent hypertension both in the USA and Britain (Agbaje, 2022). In a study at a junior high school in China by (Yuqin, Xiaoming, Yanhui, & Ming, 2022), 14.4% of 466 male learners and 16.9% of female learners had elevated blood pressure and hypertension. A published result of 88 studies with a sum of 86,637 children and adolescents from 20 Sub-Saharan African countries (Choukem, Kengne, Dehayem, & Mbanya, 2022) showed an alarming rise in obesity due to sedentary lifestyles, unhealthy diets, high Body Mass Index (BMI) all of which are reasons why there are high occurrences of adolescent hypertension in Africa. A study conducted in 2021 by (Letswalo, Nqunqa, & Mbambisa (2021) in public schools in Mthatha, OR Tambo district municipality, Eastern Cape Province, South Africa, with 56 male learners and 188 female learners aged 13–16 years, concluded overweight, obesity and hypertension show a high prevalence in rural South African youths. A study in Limpopo (Thato, Mokwana, Mphaka, & Mabunda, 2020) in 3 secondary schools among learners aged 13 – 19 years indicated a prevalence hypertension rate of 10.3% among 97 male learners and 7.4% among 121 female learners.

Available studies have concentrated much on the prevalence of adolescent hypertension to the neglect of determining the awareness of secondary school learners on hypertension. Secondary school learners' understanding of the causes of hypertension will help them adopt lifestyles that prevent the prevalence of hypertension. The consequence of the low awareness of hypertension among secondary school learners is the surge in the majority of hypertension among them, which are offshoots of overweight, obesity and other related lifestyle choices (Song, 2020). There is a growing need to determine the level of awareness secondary school learners have towards hypertension and its risks.

1.2. Problem statement

Hypertension is a leading global contributor to premature morbidity and mortality. While it has traditionally been regarded as an adult health concern, emerging evidence increasingly points to a disturbing rise in its prevalence among adolescents, particularly in low- and middle-income countries (Amponsem-Boateng & Bosu, 2022). As a public health researcher with a specific interest in adolescent health and non-communicable disease (NCD) prevention, I have grown increasingly concerned about the lack of targeted interventions addressing hypertension risks in young populations—especially secondary school learners in under-resourced settings like Burgersfort, Limpopo Province.

Through both literature review and direct engagement with educational and health systems in Burgersfort, I have observed a systemic neglect of adolescent hypertension, rooted in the enduring misconception that it is an exclusively adult disease. This misperception has resulted in poor prioritization of early prevention efforts, limited health literacy, and a gap in hypertension-related education within the secondary school curriculum. The research problem became particularly evident to me while interacting with secondary school learners during preliminary community health outreach activities. Many secondary school learners lacked even the basic understanding of hypertension's causes, symptoms, or preventive behaviours, confirming what the literature suggests: that school-going adolescents, especially in socio-economically disadvantaged settings, remain underserved in NCD-related health promotion (Chimberengwa & Naidoo, 2019).

Burgersfort presents a unique intersection of risk. It is a semi-urban mining community characterized by high consumption of processed foods sold in school tuck shops and local malls, sedentary leisure activities driven by digital technology, and minimal access to tailored health education. These conditions are amplified by broader social determinants such as poor infrastructure and fragmented health service delivery. As someone familiar with the health vulnerabilities of this community, I have witnessed the silent evolution of risk factors that predispose secondary school learners to long-term consequences such as early-onset cardiovascular diseases, kidney failure, and decreased life expectancy (Riley, Hawking & Biddle, 2018).

Adolescents in secondary schools represent a critical window for behavioural change, yet many are ill-equipped to manage their lifestyle-related health risks. This concern became personal when I realized the absence of structured hypertension education during a school-based health awareness campaign I coordinated in 2019. The curriculum continues to prioritize communicable diseases and sexual health, while largely ignoring the rise of lifestyle-related NCDs. This gap is especially troubling in a community like Burgersfort, where socio-environmental triggers for hypertension are pervasive and largely unchallenged.

Existing studies have not sufficiently disaggregated the domains of knowledge, attitude, and behaviour among adolescents a gap that this study seeks to fill using a Theory of Planned Behaviour (TPB) framework. In this research, knowledge refers to awareness of hypertension and its risk factors, attitude covers individual perceptions and motivation to act, while behaviour reflects actual lifestyle practices such as dietary choices, physical activity, and substance use.

This study, therefore, assessed the hypertension-related knowledge, attitudes, and behaviours of secondary school learners in Burgersfort. The results suggested context-specific evidence that can inform the design of culturally sensitive, developmentally appropriate interventions for adolescent health promotion. Ultimately, this research reflects both a scholarly and personal commitment to addressing a neglected but urgent public health concern.

1.3. Aim of the study

To establish the knowledge, attitudes, and behaviours of secondary school learners toward hypertension and its associated risks in Burgersfort, Limpopo Province, South Africa.

1.4. Objectives of the study

- To assess hypertension knowledge and its risks among secondary school learners at Burgersfort in Limpopo Province.
- To examine the attitude of secondary school learners regarding hypertension and its risks at Burgersfort in Limpopo Province.
- To evaluate the behaviour of secondary school learners towards hypertension and its risks at Burgersfort in Limpopo Province.
- To determine the association between the learners demographic characteristics and their knowledge, attitude and behaviour regarding hypertension and its risks.

1.5. Research Questions

- What is the knowledge level of secondary school learners regarding hypertension at Burgersfort in Limpopo Province?
- What is the attitude of secondary school learners towards hypertension at Burgersfort in Limpopo Province?
- What are the behaviours of secondary school learners regarding hypertension at Burgersfort in Limpopo Province?
- What is the association between the demographic characteristics and the knowledge, attitudes, and behaviour of secondary school learners towards hypertension and its risks?

1.6. Significance of the study

The study may facilitate early health education about hypertension and its risks, which may bring up early intervention to instill lifelong health habits among secondary school learners in Burgersfort town. Educating secondary school learners at a younger age

can assist in mitigating the risk of having hypertension before it surfaces in adulthood. Reviving the school health programme from the Department of Health, this study may help curriculum developers and policymakers in the Basic Education Department formulate programmes that create more awareness about hypertension, which will restrict the prevalence of hypertension among secondary school learners. Assist the relevant health and education authorities with evidence-based resources to design programs and curricula that help secondary school learners avoid occurrences.

1.7. Theoretical framework.

This study is guided by the Theory of Planned Behaviour (TPB), originally developed by Icek Ajzen (1985). The TPB offers a structured way of understanding how human behaviour is influenced by individual beliefs, social pressures, and perceived control. It has been widely applied in public health research to explain health-related behavioural intentions, especially among adolescents. The TPB is particularly relevant in this study as it helps explain the psychological mechanisms through which secondary school learners develop intentions toward healthy or unhealthy behaviours linked to hypertension risk, such as poor diet, physical inactivity, and substance use.

1.7.1. Constructs of TPH

Each core construct of the TPB informs a specific component of the learners' engagement with hypertension prevention behaviours:

a. Attitude toward the Behaviour

This refers to an individual's overall evaluation (positive or negative) of engaging in a behaviour. In this context, secondary school learners who believe that physical activity, healthy eating, and avoiding tobacco or sugary drinks are beneficial to their health are more likely to intend to practice those behaviours. A secondary school learner who perceives hypertension as a serious and preventable disease is more likely to adopt health-promoting actions.

b. Subjective Norms

Subjective norms relate to the perceived social pressure to perform or avoid a behaviour. For secondary school learners, this may come from peers, teachers, or family members. Adolescents often conform to peer behaviour, if healthy habits like walking to school or eating fruit are supported by peers or encouraged in the home, they are more likely to be adopted.

c. Perceived Behavioural Control

This refers to the individual's perception of their ability to perform a given behaviour, considering both internal factors (like confidence and knowledge) and external factors (like access to healthy food or sports facilities). A secondary school learner who knows about the dangers of hypertension and its risks but lacks access to safe spaces for exercise may feel less able to act, thereby reducing intention out a behaviour. 'Can I do it is a question that comes to mind'. An energetic learner interested in sports activity in a school sports facility has perceived behavioural control.

Behavioural intention

This is the motivational factor that precedes actual behaviour. It reflects how likely an individual is to perform the behaviour in question. In this study, secondary school learners' intentions to avoid risky behaviours, like eating junk food or living a sedentary lifestyle which are central to predicting their actual health behaviour.

1.7.2 Purpose and Relevance of TPB in This Study

The TPB provides a framework to evaluate secondary school learners' knowledge, attitudes, and behavioural intentions regarding hypertension prevention. It helps structure the interpretation of data by linking beliefs and perceptions to actual health-related behaviour.

In this study, TPB is used to:

- Assess how secondary school learners' attitudes towards health risks affect their behaviour,
- Evaluate the role of social influence from peers and family (subjective norms),
- Understand the secondary school learners' sense of control over their ability to prevent hypertension (perceived behavioural control),

- Interpret the strength of secondary school learners' intention to adopt or avoid risk-related behaviours.

By applying TPB, the study does not only assess what secondary school learners know or feel about hypertension and its risks, but how these cognitive and social factors influence their actions, a critical step in designing effective interventions in schools.

1.8. Operational Definition

Operational concepts refer to the specific and concrete definitions of abstract concepts or variables used within the context of a research study (Kumar, 2022). The concepts provide a clear and precise meaning of how a concept will be measured, observed, or manipulated within the study's scope, ensuring consistency and accuracy in data collection and analysis. Operational concepts are definitions of concepts used within the circumference of a given context of a study.

1.8.1 Hypertension

A condition in which the blood force against the artery walls is too high (Hinkle & Cheever, 2018). In the study, hypertension is a persistent adolescent's high blood pressure over time of more than 120/80 mmHg.

1.8.2 Knowledge

Knowledge refers to "facts, information, and skills acquired through experience or education; the theoretical or practical understanding of a subject" (Oxford Languages, 2021). In the context of this study, knowledge specifically refers to secondary school learners' awareness and understanding of the causes, symptoms, and risk factors associated with hypertension and its risks.

1.8.3 Attitude

Attitude is defined as a settled way of thinking or feeling about someone or something, often reflected in a person's behaviour (Cambridge Dictionary, 2020). According to Bohner and Dickel (2011:395), it encompasses evaluations of objects, people, or ideas. In this study, attitude refers to secondary school learners' beliefs, perceptions, or feelings toward hypertension and its risks.

1.8.4 Behaviour

Behaviour is described as the observable actions or reactions of an individual in response to external or internal stimuli (Bergner, 2013:148). In this study, behaviour pertains to the actual lifestyle practices and habits of secondary school learners such

as diet, physical activity, and substance use that either contribute to or reduce the risk of hypertension.

1.8.5 Secondary school learners

A learner is an individual who acquires knowledge, subject matter, information, understanding, and skills from teaching, starting from Grades R-12 (Encycloedia.com 2018). Secondary school learners in the perimeter of this study refer to Grade 8 – 12 learners' knowledge, attitude, and behaviour towards Hypertension and its risks.

1.9. Chapter overview

This dissertation is organised into five main chapters, followed by a reference list and annexures. Chapter One presents an overview of the global prevalence and impact of hypertension on both the general population and secondary school learners. It also covers the study's background, problem statement, research questions, objectives, and theoretical framework. Chapter two provides a literature review, examining previous research on hypertension and its risks to secondary school learners in selected countries. Chapter three details the research methodology employed to achieve the research objectives and discusses the ethical principles adhered to during the study. Chapter four offers the results and analysis of the collected data, along with supporting literature related to the findings. Chapter Five discusses the results, concludes the study, offers recommendations, and discusses the study's limitations.

1.10. Summary

Chapter One introduces the increasing burden of hypertension among adolescents, highlighting its emergence as a significant non-communicable disease affecting secondary school learners globally and within South Africa. The chapter outlines the scope and relevance of the study within the context of Burgersfort, Limpopo Province, where adolescents are exposed to multiple modifiable risk factors such as unhealthy diets, physical inactivity, and limited awareness of hypertension. The problem statement emphasizes the limited data on adolescent hypertension in sub-Saharan Africa and the lack of targeted interventions in school settings, particularly concerning secondary school learners' knowledge, attitudes, and behaviours towards hypertension and its risks.

The chapter also presents the study's aim to assess the knowledge, attitudes, and behaviours of secondary school learners toward hypertension and delineates the specific objectives and research questions guiding the investigation. The significance of the study is underscored through its potential to inform early intervention strategies, influence curriculum development, and support evidence-based policymaking in adolescent health. The theoretical framework is grounded in Ajzen's Theory of Planned Behaviour (TPB), providing a structured lens to explore the cognitive and social factors influencing secondary school learners' health-related decisions. Key operational concepts such as knowledge, attitude, behaviour, and hypertension are clearly defined to ensure consistency in the research process. Lastly, the chapter concludes with an overview of the dissertation's structure, outlining the content and purpose of each subsequent chapter.

Chapter 2

LITERATURE REVIEW

2.1 Introduction

This chapter presents an in-depth examination of recent research on secondary school learners' knowledge, attitude, and behaviour related to hypertension and its associated risks. By going through existing studies on similar topics, this researcher was able to identify patterns, comparisons, and gaps in previous research, which would improve secondary school learners' knowledge, attitude and behaviour towards hypertension and its risks. Articles related to the study were examined in Google Scholar, Medline, PubMed, journal articles, dissertations, books and nursing reports to compile a robust body of literature that forms the foundation of this study.

Globally, secondary school learners' lack of awareness about hypertension and its risks creates a fertile ground for its development, as knowledge gaps, poor attitudes, and unhealthy behaviours combine to form unhealthy choices and lifestyle habits among this population (World Health Organization, 2022). Habits significantly influence human health, and knowledge is a basic unit of habits. An uninformed and unaware secondary school learner is vulnerable through unhealthy lifestyle choices to hypertension and its risks.

2.2 Knowledge of Secondary School Learners Toward Hypertension and Its Risks

Knowledge, in the context of this study, refers to secondary school learners' understanding of the predisposing factors that contribute to the onset of hypertension. This encompasses both theoretical awareness and practical comprehension of hypertension related concepts, including its causes, symptoms, and long-term health consequences. A well-informed secondary school learner is better equipped to make health-conscious decisions that may reduce the likelihood of developing high blood pressure (Oxford Languages, 2021).

Globally, a significant knowledge gap exists among adolescents regarding hypertension and its associated risks. According to the World Health Organization (WHO, 2020), only 13.2% of adolescents demonstrate sufficient understanding of the condition, while approximately 48 million have already developed high blood pressure and a further 120 million presents with prehypertension. These statistics underscores

the urgency of equipping secondary school learners with foundational knowledge that can inform preventive behaviours and early detection.

In developed nations such as the United States and the United Kingdom, multiple studies confirm adolescents' limited grasp of hypertension's causes and consequences. Research by Davis et al. (2019:99) showed that only 30% of American secondary school learners could accurately define hypertension. Learners demonstrated partial knowledge of general risk factors like obesity and inactivity but exhibited substantial gaps in understanding the roles of salt, stress, and sleep deprivation (Cuffee et al., 2020; Chow et al., 2017). Similarly, UK based studies found that fewer than one quarter of secondary school learners could identify key hypertension risks, with stress and processed food consumption being widely underestimated (Patel et al., 2020:123; Waring et al., 2021). These studies highlight that even in well-resourced countries, learners are not receiving comprehensive, practical hypertension education pointing to a global educational shortfall.

In Asian countries such as China and India, urbanization and dietary transitions have increased hypertension risks among adolescents. Studies reveal that while awareness of obesity as a risk factor is moderate, critical gaps remain in secondary school learners' understanding of salt intake and psychosocial stress (Zhang et al., 2021; Gupta & Singh, 2022). In India, fewer than 30% of adolescents could correctly identify risk factors, often due to culturally rooted dietary practices and lack of targeted health education (Rao et al., 2020; Tharkar & Viswanathan, 2021). These findings expose the regional lack of culturally relevant and school integrated hypertension content.

In sub-Saharan Africa, where adolescent hypertension is rising (Jones, 2023), secondary school learners' knowledge is similarly limited. In countries such as Tanzania, the DRC, and Nigeria, studies highlight weak school-based health education and insufficient awareness campaigns (Mosha et al., 2021:200; Akinlua et al., 2023). For instance, in Lagos, only a small proportion of secondary school learners understood the link between obesity and hypertension, despite a hypertension prevalence rate of 12.9% among adolescents (Ifeoma et al., 2022:300). Cultural beliefs, poor access to preventive care, and socio-economic constraints further compound these knowledge deficits among secondary school learners. There is a visible lack of disaggregated data on secondary school learners-specific knowledge gaps, especially in lower-income urban and suburban African contexts.

South Africa faces similar challenges. Despite the country's dual burden of infectious and non-communicable diseases, school health programmes often prioritise HIV/AIDS over hypertension (Department of Basic Education, 2011; Levin, 2006). This has contributed to knowledge gaps among secondary school learners. A study in KwaZulu-Natal showed that 13.7% of Grade 12 learners had hypertension, yet many lacked adequate understanding of its causes and risks (Maseko et al., 2018). Another study in the Western Cape revealed that 76.4% of university students who are products of secondary schools have good theoretical knowledge but still engaged in unhealthy practices, illustrating the disconnect between knowledge and behaviour (Ajayi et al., 2023). These studies suggest that knowledge retention may not translate into preventive action, especially without early and continuous reinforcement during adolescence or secondary school period.

In Burgersfort, Limpopo Province the focal setting for this study knowledge about hypertension remains alarmingly low. Contributing factors include a limited focus on non-communicable diseases in the school curriculum, language barriers, and persistent cultural misconceptions about disease aetiology (Dlamini, 2020:67; Mabasa, 2021:92; Jones, 2021:72). Additionally, the influence of mining industry lifestyles characterized by poor diet, sedentariness, and elevated stress has heightened adolescents' vulnerability to hypertension and its risks. However, the lack of sufficient comprehensive data on secondary school learners' knowledge in this locality highlights a pressing need for targeted educational interventions.

To address these gaps, integrating hypertension education into school subjects such as Life Orientation (Grades 7–12), Natural Sciences, and Life Sciences is essential. Such integration should emphasize interactive learning, early identification of symptoms, understanding of risk factors, and health-promoting practices. Studies suggest that knowledge when effectively transmitted can foster better habits and long-term cardiovascular health (Hagger et al., 2022).

In conclusion, bridging the knowledge gap among secondary school learners regarding hypertension is critical for preventing the early onset of the disease. This study seeks to evaluate learners' knowledge in Burgersfort as a foundation for tailored health education strategies and sustainable behavioural change. This study seeks to evaluate learners' knowledge in Burgersfort as a foundation for tailored health education strategies and sustainable behavioural change.

2.3 The Attitude of Secondary School Learners Toward Hypertension and Its Risk

In this study, “attitudes” refer to the feelings, beliefs, perceptions, and dispositions of secondary school learners toward hyper-tension and its risks. Attitudes shape how learners evaluate hypertension in terms of personal risk, urgency of preventive action, and acceptance of lifestyle modifications. These attitudes are often informed by cultural beliefs, educational exposure, and peer or community influences, which in turn affect secondary school learners' readiness to adopt or ignore preventive behaviours.

Global and Regional Perspectives

Globally, adolescents often demonstrate a passive or dismissive attitude toward hypertension, viewing it as a health concern re-served for older adults. In the United States, research by Aronson et al. (2021) and Egan et al. (2020) highlights how secondary school learners largely believe that hypertension is irrelevant to their age group, resulting in low engagement with preventive behaviours such as routine blood pressure checks or healthy dietary habits. This reflects a gap in secondary school learners targeted health messaging, particularly around early prevention of chronic illnesses. This misperception is reinforced by school health education that tends to prioritize short-term or visible conditions (e.g., mental health, injury prevention), while neglecting chronic non-communicable diseases like hypertension.

A similar pattern is observed in the United Kingdom, where public health initiatives have shifted focus toward mental health, in-advertently reducing awareness of physical illnesses like hypertension and its risks. This imbalance in health messaging contributes to secondary school learners' indifference toward long-term cardiovascular risks and insufficient concern about modifiable behaviours such as diet and stress management (Jones & Brown, 2021:320; Ravenscroft et al., 2020:245). This reveals a misalignment in health education priorities, creating gaps in secondary school learners' awareness of cardiovascular health.

In East and South Asia, adolescent attitudes toward hypertension are often shaped by cultural fatalism and intergenerational beliefs. In China, secondary school learners view hypertension as a disease of aging, which diminishes their perceived personal risk (Wang et al., 2019:45–53; Xu et al., 2019). In India, learners frequently believe hypertension is a fate-bound or spiritual condition, leading to indifference and a preference for traditional or non-scientific remedies (Sharma et al., 2019; Gupta et al., 2020:120). These attitudes undermine medical advice and reduce the likelihood of

adopting effective preventive behaviours. These examples underline a knowledge-attitude gap, especially where fatalistic or spiritual beliefs substitute for scientific understanding.

African Contexts

In sub-Saharan Africa, adolescent attitudes toward hypertension are influenced by a complex interplay of cultural norms, misinformation, and health system limitations. Studies in Tanzania, Nigeria, and the DRC report widespread misconceptions that hypertension results from supernatural forces or emotional trauma rather than physiological causes, discouraging secondary school learners from seeking preventive care (Mosha et al., 2021:310; Ntumba et al., 2021:78; Akinwale, 2022:45). Negative peer influences and glamorized portrayals of unhealthy foods in local media also shape attitudes that trivialize hypertension risks (Shayo et al., 2020:205; Olawale, 2022:78). In Tunisia, economic struggles and a reliance on informal health advice further increase negative attitudes, delaying diagnosis and effective management (Ben Romdhane et al., 2021:245). These findings expose gaps in culturally appropriate health education and reinforce the need for context-specific interventions.

The South African Experience

South African secondary school learners' attitudes toward hypertension are shaped by both cultural values and historical experiences. Traditional norms put value on large body types as symbols of prosperity, conflicting with health messages about the dangers of obesity (Ndlovu, 2022:102). Popular high fat foods such as boerewors and braais are tied to social identity and community bonding, making it difficult for secondary school learners to perceive such foods as health risks (Nkosi, 2023:53). These cultural contradictions reflect a gap between lifestyle ideals and health realities among adolescents. Additionally, longstanding mistrust in formal healthcare rooted in apartheid era discrimination and government handling of the HIV/AIDS crisis has produced doubts around health messaging, including that related to hypertension and its risks (Zulu, 2022:89). This mistrust underscores a deeper attitudinal barrier that remains unaddressed in national school health policy. Misunderstandings about medical technology, such as blood pressure monitors, further discourage regular health screenings (Sithole, 2023:55).

The media and popular culture also play a role in perpetuating unhealthy attitudes, particularly among young people. For instance, kwaito music and televised sports often glorify hypermasculinity, endurance, and invincibility, which can lead to a lack of

awareness about the risks of chronic illnesses (Mkhize, 2023:67). Furthermore, certain social ideologies like "Ubuntu" and township slang, while valuable for building community cohesion, can sometimes downplay secondary school learner's responsibility when it comes to making healthy choices (Dlamini, 2023:34).

The Case of Burgersfort, Limpopo Province

In Burgersfort, Limpopo Province the focal area of this study secondary school learners' attitudes toward hypertension are shaped by immediate environmental concerns and longstanding cultural beliefs. The prominence of platinum mining in the region has shifted local health priorities toward acute and occupational illnesses like silicosis and tuberculosis (Mabunda, 2023:56; Khumalo, 2022:78). As a result, hypertension and its risks is perceived as a distant or non-urgent threat.

Cultural practices, such as the consumption of Marula alcohol and the use of indigenous healing remedies, reinforce a distrust of biomedical treatments and preventive strategies. Secondary school learners often place faith in the Tubatse River's supposed healing properties or in magnesite consumption, believing this offer sufficient protection (Sekhukhune, 2022:63). Such beliefs point to a localized attitudinal gap, rarely addressed in public health curricula. Daily physical activities such as climbing the Leolo Mountains are considered adequate exercise, masking the need for consistent cardiovascular health monitoring (Ngobeni, 2022:75). These beliefs, compounded by unreliable water supplies, preference for cold drinks during school break time and a health system focused more on communicable diseases, deprioritize hypertension and its risks awareness. Furthermore, the symbolic value of fast food as a sign of urban progress diminishes the perceived need for dietary caution (Khosa, 2023:91). This highlights the need for studies that explore socio-economic identity and its role in shaping health attitudes.

Conclusion

Across global, regional, and local contexts, secondary school learners often demonstrate indifferent or misinformed attitudes towards hypertension. In Burgersfort, this is intensified by competing health priorities, cultural narratives, and gaps in targeted education. There is a notable absence of sufficient studies that examine how layered environmental, historical, and socio-cultural factors intersect to shape secondary school learners' health attitudes in underrepresented South African locales. These attitudes have profound implications for preventive health behaviour and long-term risk reduction among secondary school learners. Addressing them requires

culturally sensitive, age-appropriate, and community specific interventions. Embedding hypertension awareness into the Life Orientation curriculum and engaging local leaders in participatory education campaigns are crucial steps toward transforming secondary school learners' attitudes and fostering health-promoting behaviour.

2.4 Behaviour of Secondary School Learners Toward Hypertension and Its Risk

South African secondary school learners exhibit similar trends in hypertension-related behaviours. The widespread availability and aggressive marketing of sugary drinks and fast foods have normalized unhealthy dietary habits, particularly in low-income communities with limited access to healthy alternatives (Nguyen et al., 2023:45; Wiles et al., 2023:34; Temple et al., 2011; Fee-ley et al., 2012). Consumption patterns among secondary school learners often favour high-calorie, low-nutrient options, driven by affordability, convenience, and exposure to targeted advertising (Igumbor et al., 2012:8; Reddy et al., 2019).

Screen addiction and sedentary lifestyles are prevalent, with secondary school learners spending extended hours on smartphones, gaming, and television, often at the expense of physical activity (Loprinzi et al., 2019:112; Roman et al., 2015; Shukri et al., 2020). The South African National Health and Nutrition Examination Survey (SANHANES) found that over 60% of adolescents exceed recommended screen time limits, correlating with higher body mass index (BMI) and poor dietary patterns (Shisana et al., 2014).

A gap exists in addressing digital addiction as a behavioural risk factor for hypertension. Emerging studies highlight how excessive digital media use contributes not only to physical inactivity but also to sleep disturbances, stress, and impulsive snacking factors linked with elevated blood pressure in adolescents (Kremer et al., 2019; Zhang et al., 2022; Twenge & Campbell, 2018). Despite its growing relevance, digital addiction remains under-addressed in most school health curricula.

Psychosocial stressors ranging from academic performance pressure and bullying to exposure to community violence, economic hardship, and unsafe public transport further impact secondary school learners' ability to maintain healthy lifestyles (Landau & Misago, 2022:56; Otieno & Vanderschuren, 2023:90; van der Westhuizen & Swart, 2020; Mpondo et al., 2017). Such stressors are associated with emotional eating,

disrupted sleep patterns, and avoidance of physical activity, all which contribute to hypertension risk (Meldrum et al., 2012; Moagi et al., 2021).

Crucially, historical health inequities stemming from apartheid continue to influence behaviour through disparities in access to quality health education, recreational facilities, and preventive care (Moodley et al., 2022:101). Secondary school learners in un-der-resourced schools often lack structured physical education and have limited exposure to formal hypertension awareness initiatives. A gap exists in addressing digital addiction as a behavioural risk factor for hypertension.

2.4.1 Behavioural Risks in Burgersfort, Limpopo Province

In Burgersfort, a mining-intensive region of Limpopo Province, behavioural risk factors for hypertension and its risks are closely tied to local environmental and socioeconomic conditions. Secondary school learners in this community are exposed to high-salt and high-fat diets, often derived from fast foods associated with mining shift culture and limited home cooking due to irregular parental schedules (Moyo et al., 2022:67). These indicates a context-specific behavioural gap due to socio-economic dynamics minimally researched. Water shortages and inclination for cold drinks have led to widespread consumption of sugary beverages as substitutes for clean drinking water, increasing sugar intake and associated hypertension risks (Van der Merwe et al., 2023:89). These reflects a behavioural risk influenced by environmental and infrastructure gaps.

The lack of adequate sports infrastructure and recreational spaces in public schools limits physical activity among learners. Additionally, the traditional Bapedi diet while culturally significant is often high in saturated fats and salt, posing challenges for promoting behaviour change (Sekhukhune & Makhado, 2022:45; Legodi & Maake, 2022:56). This indicates a cultural nutritional gap where health interventions are not adapted to local dietary customs. Limited access to secondary school learners friendly healthcare and irregular hypertension screening programs hinder early behavioural interventions which reveals a service delivery gap affecting timely behavioural change. (Nkosi et al., 2023:112).

2.4.2 Synthesis and Recommendations

The behavioural determinants of hypertension among secondary school learners must be addressed through multi-layered interventions. Globally and locally, unhealthy behaviours are modified by structural deficits in health education, unequal access to preventive services, and cultural misconceptions about hypertension and its risks

which results to multiple intersecting behavioural gaps in education, service, and perception. In contexts like Burgersfort, where environmental and socioeconomic factors further entrench these behaviours, tailored education programs must be culturally relevant, community-driven, and supported by policy.

Efforts to improve secondary school learners' behaviour should focus on:

- Integrating hypertension education into school curricula.
- Promoting regular physical activity through school and community programs.
- Regulating access to unhealthy foods and sugary drinks within school environments.
- Enhancing parental engagement and adolescent health literacy.
- Ensuring availability of adolescent-friendly healthcare services for screening and early intervention.

A comprehensive, context-sensitive approach is essential to moderate behavioural risks and prevent the early onset of hyper-tension among secondary school learners in both global and local settings.

2.5 Summary of the literature review chapter

This chapter critically reviewed existing literature on the knowledge, attitudes, and behaviours of secondary school learners towards hypertension and its associated risks. The evidence highlights a widespread lack of hypertension-specific knowledge, negative or indifferent attitudes toward prevention, and engagement in behaviours that heighten risk such as poor dietary habits, physical inactivity, and limited health-seeking practices.

International trends reflect systemic gaps in school-based health education and sociocultural factors that perpetuate misconceptions about hypertension as an adult-only disease. Within the South African context, these challenges are compounded by structural inequalities, psychosocial stressors, and limited access to secondary school learners-friendly healthcare services. In Burgersfort, Limpopo Province, local environmental and socioeconomic conditions further entrench unhealthy behaviours, including high consumption of salty and sugary foods, minimal physical activity, and scarce exposure to preventive health information.

Overall, the review underscores the urgent need for multifaceted, contextually tailored interventions aimed at improving health literacy, promoting positive behavioural change, and enhancing access to preventive services among secondary school

learners. Addressing these gaps is essential to reducing the early onset and long-term consequences of hypertension and its risks in this vulnerable population of secondary school learners.

Chapter 3

RESEARCH METHODOLOGY

3.1 Introduction

The previous chapter reviewed the literature on the knowledge, attitude, and behaviour of secondary school learners towards hypertension and its risks. This chapter outlines the methodology used to examine the knowledge, attitude, and behaviour of secondary school learners towards hypertension and its risks in Burgersfort, Limpopo. The methodology includes research design, study setting, study population, sampling process and sample size, data collection instruments and their validity and reliability, pilot study details, data collection and analysis procedures, ethical considerations, and a summary of the research process. This information provides transparency into the research methodology and enables readers to understand how the research questions were addressed (Harris et al., 2022).

3.2 Research Methodology

3.2.1 Research Approach

According to Bryman (2022) and Creswell & Creswell (2023), quantitative research is a systematic process used to describe and analyse phenomena by assigning numerical values to variables, objectively interpreting facts, and revealing hidden patterns and relationships. This study used a quantitative approach to investigate the knowledge, attitude, and behaviour of secondary school learners towards hypertension and its risks in Burgersfort, Limpopo province. The method utilized measurements, numerical figures, and statistics as mathematical tools to identify, describe, and define patterns and phenomena.

3.2.2 Research Design

A descriptive design was employed in this study to investigate the phenomenon of secondary school learners' knowledge, attitude, and behaviour towards hypertension and its risks. This design provides a comprehensive and detailed description of the population and situation, seeking to uncover what secondary school learners know about hypertension and its risks (Kumar, 2022). The design determines individual characteristics, school environments, causative factors, access to health resources, and support systems.

By examining these aspects, this study aims to gain a comprehensive understanding of secondary school learners' knowledge, attitude, and behaviour towards hypertension and its risks in Burgersfort (Harris et al., 2022).

3.3 Research Setting

Kumar (2022) defines the research setting as the physical location where data collection takes place, which can be in a natural setting such as homes, workplaces, or schools. For this study, the research setting was partially controlled, specifically at three selected secondary schools: Batau High School, Mmditsi High School, and Mogale Wa Bogale Technical High School. These schools were chosen due to their proximity to the researcher's residence, minimizing travel costs and facilitating easier access for data collection (Harris et al., 2022). The schools are located within a 5-7 km radius of each other, with Batau High School being 3.7 km from Mmditsi High School and 5.7 km from Mogale Wa Bogale Technical High School via the R37 road.

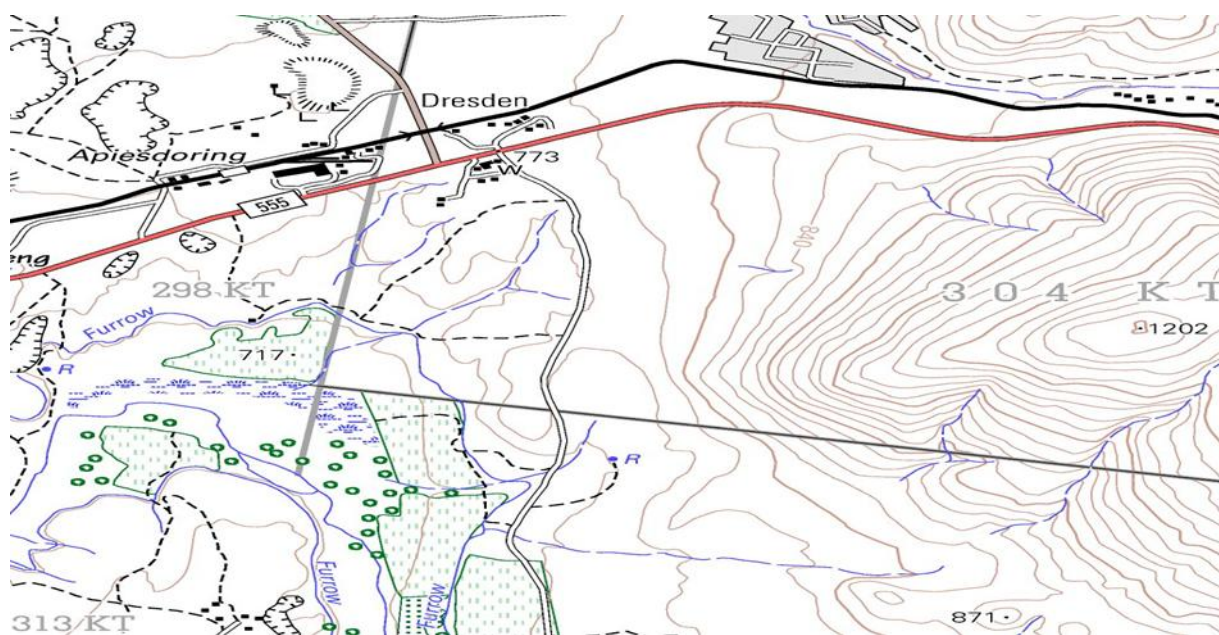


Figure 3.1 Map of Burgersfort.

Burgersfort, located in the Greater Tswana area of the Sekhukhune District Municipality, had a population of 6,369 residents in the 2011 census, comprising 3,639 males and 2,731 females, and spans an area of approximately 28.10 km² within a broader municipal population of about 335,676.

3.4 Target Population

The target population for this study consisted of all Grade 8-12 secondary school learners aged under 20 years, typically considered adolescents, in three selected secondary schools in Burgersfort, Limpopo province (Kumar, 2022). The participating secondary school learners participated in the study with parental informed consents and assents for the minors where applicable. Minors in this study submitted parent/guardian signed consent forms. According to Burns & Grove (2010:290), a target population is defined as the entire population that meets the criteria of certain research. A stratified convenience sampling method was used, dividing the sample into subgroups based on learners' grade levels (Grade 8-12) and gender, ensuring a balanced representation of all subgroups within the target population to bridge this knowledge gap.

3.5 Sampling Method and Sampling Size Determination

Sampling enables researchers to draw insights from a representative subset rather than an entire population (Kumar, 2022). For this study, a non-probability convenience sampling approach was applied, which allowed the researcher to engage with participants who were easily accessible within the school setting (Harris et al., 2022). This method was suitable given time and logistical constraints while still enabling the acquisition of preliminary data on learners' knowledge, attitudes, and behaviours toward hypertension and its risks.

3.5.1 Population and Sampling Frame

The total study population included all Grade 8–12 learners (N = 3,901) from three selected public secondary schools in Burgersfort, Limpopo Province. The population breakdown was 1,848 male and 2,053 female learners. The principals were informed of the required numbers of learners from their schools. The final sample of 350 participants was proportionally stratified by grade and gender.

3.5.2 Sample Size Calculation

The sample size was calculated using Cochran's formula for finite populations to ensure statistical validity:

$$n_0 = (Z^2 \times p \times (1 - p)) / MOE^2$$

Where:

- Z = 1.96 (for 95% confidence level)
- p = 0.5 (assumed population proportion for maximum variability)

- MOE = 0.05 (margin of error)

Initial calculation (for infinite population):

$$\begin{aligned} n_0 &= (1.96)^2 \times 0.5 \times (1 - 0.5) / (0.05)^2 \\ &= 3.8416 \times 0.25 / 0.0025 \\ &= 384.16 \approx 385 \end{aligned}$$

Adjustment for finite population (N = 3,901):

$$\begin{aligned} n &= 385 / (1 + (384 / 3901)) \\ &= 385 / 1.0984 \\ &\approx 350 \end{aligned}$$

3.5.3 Stratified Sample Distribution

The sample was proportionally distributed by grade and gender based on school registers. Table 3.1 below showed the distribution of the final 350 participants:

Table 3.1: Sample by Gender and Grade

Grade	Male Population	Male Participants	Female Population	Female Participants	Total Participants
8	578	52	630	56	108
9	379	34	450	40	74
10	465	42	468	42	84
11	283	25	318	29	54
12	143	13	187	17	30
Total	1,848	166	2,053	184	350

3.5.4 Visual Representation of Sampling Distribution

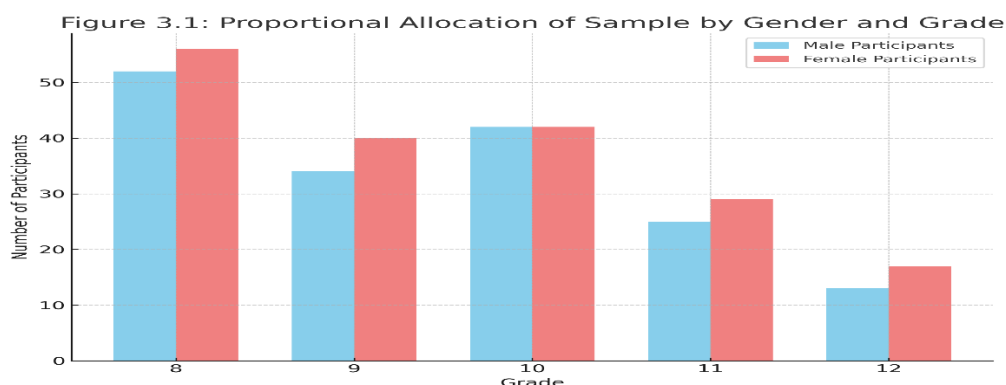


Figure 3.1: Proportional Allocation of Sample by Gender and Grade

This sample size calculation and proportional stratification by grade and gender enhance the representativeness of the study, ensuring that insights derived from the sample can be reasonably extended to the wider learner population in Burgersfort. The inclusion of a 5% margin of error and a 95% confidence level aligns with quantitative research standards for reliability and precision.

3.5.4 Eligibility Criteria

Eligibility criteria are essential for defining the boundaries of the study population and ensuring that participants possess the attributes necessary to contribute valid and reliable data. As noted by Polit and Beck (2008:338), eligibility criteria refer to the specific attributes or descriptors that individuals must possess to be considered suitable for participation in a study. Conversely, exclusion criteria refer to the characteristics or conditions that disqualify individuals from participation.

In this descriptive, quantitative study determining secondary school learners' knowledge, attitudes, and behaviours related to hypertension and its risks, clear and context-sensitive inclusion and exclusion criteria are essential. These criteria help ensure that the study sample is both representative and capable of engaging meaningfully with the research instruments, such as structured questionnaires.

3.5.4.1 Inclusion Criteria:

Participants must meet all the following conditions to be included in the study:

- Be a secondary school learner enrolled in Grades 8–12.
- Be within the adolescent age range, defined as between 10 and 19 years old at the time of data collection.
- Demonstrate willingness to participate voluntarily, consent from minors was obtained through a dual consent process involving signed parental/guardian consent forms and learner assent forms, ensuring voluntary participation and compliance with ethical and legal research standards in South Africa.
- Be able to read and write in English.
- Have sufficient cognitive and technological capacity to understand and complete a digital or paper-based questionnaire.

3.5.4.2 Exclusion Criteria:

Participants will be excluded from the study if any of the following conditions apply:

- They are older than 19 years or younger than 10 years, thus falling outside the adolescent age range.
- They are unwilling or unable to provide informed assent or lack parental/guardian consent where required.
- They experience significant language or literacy barriers that prevent them from understanding the questionnaire, even with assistance.
- They are unable to complete a paper-based alternative questionnaire.
- They have cognitive impairments that significantly hinder their ability to comprehend or respond reliably to survey questions.

3.6 Data Collection Instrument

Data collection instruments are procedures used to gather information from participants (Kumar, 2022). In this study, a self-developed questionnaire was used to collect data (Annexure E). The questionnaire consisted of four sections:

Section A: Knowledge about hypertension and its risks

Section B: Attitudes towards hypertension and its risks

Section C: Behaviours related to hypertension and its risks

Section D: Demographic information of participants

The questionnaire was designed to gather information about secondary school learners' knowledge, attitudes, and behaviours regarding hypertension and its risks. A pilot study was conducted on the 18th of April with 35 randomly selected secondary

learners to validate the reliability of the questionnaire for the main study. The pilot study was used to fortify the questionnaire for the main study.

3.7 Pilot Study

A pilot study is a small-scale preliminary investigation conducted to evaluate reliability, and validity of research instruments and procedures before the main study (Grove and Gray, 2019). In this study, the pilot study was conducted to validate the researcher-developed questionnaire and identify potential logistical or comprehension issues that could affect data quality during the main data collection phase.

Study Setting and Participants

The pilot study was conducted at a private secondary school within the Sekhukhune East District, Limpopo Province. This setting was selected due to its similarity to the main study sites in demographic and contextual characteristics. A total of 35 learners (representing 10% of the projected sample size) were randomly selected from the school's Grade 8 to 12 classes.

To ensure random selection, each learner from the targeted grades was assigned a number, and a simple random sampling technique using a random number generator was employed to select participants. Selection criteria included learners aged between 10 and 19 years who were able to read and write in English language, and translation into Sepedi (the dominant regional language).

Ethical Considerations and Permissions

Prior to the pilot, the researcher engaged in a familiarization visit to the school on 12 April. During this visit, the study was introduced to the school principal and the delegated teacher assigned to assist the researcher. All the listed required approvals were submitted to the principal:

- Ethical clearance from the University Research Ethics Committee (Annexure A),
- A permission letter from the Limpopo Provincial Department of Education (Annexure B),
- Approval from the Sekhukhune East District Office (Annexure C).

On 16 April, the researcher met with selected learners and the assigned teacher to explain the study's purpose and procedures. The voluntary nature of participation was

emphasized and written informed consent (from parents/guardians) and assent (from learners) were obtained.

Administration and Refinement of the Instrument

The pilot study was implemented on 18 April, with learners completing the questionnaire under the supervision of the researcher and the delegated teacher in a quiet classroom environment. To account for language and literacy barriers, the researcher was available to clarify questions when needed.

Each participant completed the questionnaire in approximately 30 minutes. Upon completion, participants were invited to provide feedback regarding question clarity, difficulty, and understanding. Based on this feedback, minor revisions were made to sentence structure and wording to improve comprehension and flow.

Reliability and Validity Testing

Reliability analysis was conducted using Cronbach's alpha to determine the internal consistency of the questionnaire. The reliability scores for the sub-sections were as follows:

- Knowledge section (14 items): $\alpha = 0.732$
- Attitude section (16 items): $\alpha = 0.864$
- Behaviour section (16 items): $\alpha = 0.786$

These results exceed the commonly accepted minimum reliability threshold of $\alpha = 0.70$, indicating satisfactory internal consistency (Polit and Beck, 2021). This pilot provided critical insight into the functionality and clarity of the instrument, confirming that the methodology was robust and ready for deployment in the main study. This pilot study became the blueprint for the main studies in the three selected schools.

3.7.1 Validity of the Instrument

Validity refers to the extent to which an instrument accurately measures what it is designed to measure (Kumar & Phrommathed, 2022). Methods such as content validity used to evaluate validity. In this study, content validity was used to ensure the questionnaire items were relevant and representative of the variables of knowledge, attitude, and behaviour being measured. Cronbach's alpha and bootstrap confidence intervals established reliability as a precursor to validity.

In this study, the content validity ensured the questionnaire items were relevant and representative of the constructs of knowledge, attitude, and behaviour being

measured, which are acceptable by Cronbach's alpha values exceeding the minimum threshold of 0.7.

3.7.2 Reliability of the Instrument

Reliability refers to the consistency of a study's findings across different settings, participants, and contexts, demonstrating its replicability and robustness (Bryman, 2020). The consistency of the constructs of the set of knowledge, attitude, and behaviour as the measuring instrument for the pilot study, which was modified for the main study, was confirmed using Cronbach's alpha, which assessed the internal consistency of the questionnaire. The overall questionnaire had 46 items and a Cronbach's alpha of 0.732, indicating acceptable reliability. The three sections of the questionnaire had the following Cronbach's alpha values. Knowledge (14 items): 0.732 (acceptable). Attitude (16 items): 0.864 (excellent), Behaviour (16 items): 0.786 (good).

3.8 Recruitment Process

The researcher recruited secondary school learners from Batau High School, Mmiditsi High School, and Mogale Wa Bogale through a random sampling method by obtaining permission (approval) from the principals of the respective schools, followed by distributing printed URLs to the participants. The learners were then instructed to submit their responses online via an electronic questionnaire on Google Forms. Most schools do not allow phones in schools except on permission; hence the online submission were done by learners after the school. However, the learners also had hard copies of the questionnaires. During the data collection, the researcher addressed the questions and concerns of the learners. A total of 400 learners were randomly selected from the three schools, with 133 from Batau High School, 144 from Mmiditsi High School, and 123 from Mogale Wa Bogale. Ultimately, 366 learners submitted their questionnaires using Google Forms.

3.9 Data collection

Data collection is a systematic process of gathering information to investigate a research problem (Smith et al., 2023). The data for collection for this study involved visiting three schools Batau High School, Mmditsi High School, and Mogale Wa Bogale Technical High School on September 4th, 10th, and 16th, respectively. At each school, the researcher met with the principal and vice principal and then interacted with randomly selected learners from grades 8 to 12. Minors were given a participant information leaflet and a consent form outlining the study's objectives, voluntary nature, anonymity, confidentiality, potential risks, result communication, and the researcher's contact details. In line with South African research ethics regulations, written parental/guardian informed consent was obtained to legally authorize the minor's participation, while a simplified child assent form appropriate to the learners' age and comprehension level was signed by the minors themselves to confirm their voluntary agreement. This dual consent process was approved by the institutional ethics committee; these forms were collected prior to data collection. Using these calculated figures,

$$\frac{1300}{3901} \times \frac{400}{1} = 133 \text{ learners, } \frac{1400}{3901} \times \frac{400}{1} = 144 \text{ learners, } \frac{1201}{3901} \times \frac{400}{1} = 123 \text{ learners}$$

400 learners from the three schools were selected using number generator, which was applied within each stratum to select participants proportionally.

The researcher explained the study's aims, objectives, and voluntariness, addressed questions and concerns, and distributed this link:

<https://forms.gle/CYZKBbcBzitzipzX8> to the electronic questionnaire. A total of 400 learners participated, with 366 submitting their responses online.

3.10 Ethical considerations

An ethical clearance certificate (Ref #2024=02=12 HRECLVN 002) was obtained from the University of Fort Hare's Research Ethics Committee (Annexure A). Permissions to conduct the study were granted by the Department of Basic Education in Polokwane (Annexure B) and the Sekhukhune East District Office (Annexure C). Additional permission letters were issued to and approved by the principals of the selected secondary schools (Annexure D).

Given that the study involved minors (learners under the age of 20), special attention was paid to protecting their rights and welfare. Informed consent was obtained not only from the learners but also from their parents or legal guardians through signed consent

forms outlining the purpose, procedures, potential risks, and benefits of participation. Learners also provided assent, affirming their willingness to participate voluntarily. To uphold the principle of justice, the selection of participants was conducted fairly without any form of coercion or discrimination. Schools and learners were selected based on clear inclusion criteria, ensuring equitable representation from various backgrounds within the district. No learner was unfairly included or excluded from the study.

The researcher also adhered to other key ethical principles, including beneficence (minimising harm and maximising benefits), anonymity and confidentiality (ensuring no personal identifiers were used in the analysis or reporting), privacy, and the right to self-determination (participants could withdraw at any time without penalty). These principles collectively ensured that the research was conducted with the highest ethical standards, particularly considering the vulnerability of the population involved.

3.10.1 Informed consent

Obtaining informed consent is a crucial aspect of ensuring the ethical integrity and legality of a study (Smith et al., 2022). In this research, participants were given a consent form (Annexure G & H) to read and ask questions for clear understanding. The aim and objectives of the research were further explained to them in a language understandable to the participants. Participants were informed that the study was voluntary, and thereafter, consent forms were signed willingly. Both online and hardcopy consent forms were provided, and participants signed voluntarily, demonstrating their understanding and agreement to participate in the study. Principals' permission in the context refer to their permission and approval of the study in their respective schools.

3.10.2 Right to Privacy

The right to privacy is a fundamental human right, and individuals expect it to be respected (World Health Organization, 2022). In this study, participants' privacy was maintained by ensuring confidentiality and utilizing codes instead of names in the questionnaires. Access to their information was restricted to the researcher and supervisor, with their explicit consent. This ensured that participants' personal information was protected and their right to privacy was upheld.

3.10.3 Anonymity and Confidentiality

Anonymity and confidentiality are crucial in research to uphold participants' dignity (Gray, 2023). In this study, participants' information was kept safe by omitting their names and replacing them with codes, ensuring their identities were protected. The collected data will be stored for 5 years, and access is strictly limited to research team members directly involved in the study. The information is saved in a secure software format, protected with an access-restricted password, known only to the researcher, supervisor.

3.10.4 Principle of Justice

The principle of justice in research ethics requires that all participants be treated fairly and equitably, with due consideration for their vulnerability and individual rights (World Health Organization, 2022). In this study, the principle was operationalized through deliberate and ethically sensitive participant selection, data collection, and informed consent procedures.

To ensure fairness in participant recruitment, the researcher employed stratified convenience sampling, carefully selecting learners from Grades 8 to 12 based on their representation across age, gender, and school grade levels relevant to the research problem. This approach aimed to minimize selection bias and enhance equity in the inclusion process.

Given that participants were minors (below 18 years of age), strict ethical protocols were followed. Informed parental or guardian consent was obtained in writing prior to any data collection. In addition, assent was obtained from each learner, ensuring their voluntary participation and understanding of the study's aims, risks, and procedures. This dual-layered consent process was critical in upholding justice and respecting the evolving autonomy of secondary school learner participants, in accordance with national and international research ethics guidelines (Department of Health, 2015; WHO, 2022).

Equity in data collection was further upheld by administering the same questionnaire to all participants, ensuring consistency in the measurement process. To safeguard s' welfare, the questionnaire was designed to avoid any psychological harm or sensitive content. Throughout the data collection process, the researcher was present to provide clarification where needed, fostering a respectful and supportive research environment.

No financial or material incentives were provided to participants, in line with the principle of non-coercion, which reinforces fairness and voluntariness in participation. The study thus upheld both the ethical imperatives of justice and beneficence by promoting equitable treatment, safeguarding participant welfare, and respecting legal and developmental norms for adolescent research participation.

3.11 Data analysis

Data analysis involves the collection, classification, synthesis, and summarization of information to describe it in meaningful terms (Gravetter & Forzano, 2022). In this study, the data collected from secondary school learners was captured on an Excel sheet and transferred to Epi Info 7 for statistical analysis. The statistician used both descriptive and inferential statistics to analyse the information and summarize the findings. Mean, quartile scores and proportions were presented in descriptive tables, highlighting key findings.

3.12 Summary

This chapter has explained the research design and methods employed in this study, covering the population, sampling method, data collection, and data validation and reliability. The next chapter (Chapter 4) will present the results, building on the foundation established in this chapter.

CHAPTER 4

DATA PRESENTATION AND RESULTS

4.1. Introduction

This chapter presents the results of both descriptive and inferential statistics of the survey results that were conducted to determine the knowledge, attitude, and behaviour of secondary school learners in Burgersfort, Limpopo province, regarding hypertension and its risks. The statistics provided strength to the reliability and validity of the information, which evaluates the relationship between secondary school learners and hypertension risks across three variables: knowledge, attitude, and behaviour. These variables assess the learners' understanding of factors that contribute to hypertension and its risks.

4.2. Data Screening and Management

An electronic questionnaire was distributed using the Google Forms platform to randomly select secondary school learners in grades 8 to 12 from three high schools in Burgersfort, Limpopo Province. The summary is presented in Table 4.1 below.

Table 4.1: Summary of Participants During Data Collection

Description	Number	Percentage (%)
Targeted respondents	400	
Responses received	366	91.5% of sample size
Incomplete responses	34	
Valid responses (final sample used)	332	83.0% of sample size

4.3. Demographic characteristics of the respondents

The demographic study looked at respondents' ages (DGD1), current grade levels (DGD2), genders (DGD3), ethnicities (DGD4), and hypertension status (DGD5). Furthermore, the analysis investigated their parents' hypertension status (DGD6) and their means of transportation to school (DGD7). The results of this analysis are shown below. Demographic characteristics of Respondents were illustrated in table 4.2 below

Table 4.2: Demographic Characteristics of Respondents (N = 366)

Variable	Grade 8	Grade 9	Grade 10	Grade 11	Grade 12	Total (%)
Mean Age (years)	14.3	15.2	16.6	17.4	17.9	-
Respondents (n)	109	77	87	56	37	100%
% by Grade	32.8%	23.2%	26.2%	16.9%	11.1%	
Gender (F/M)	64/45	41/36	43/44	29/27	18/19	F:195(53.3%) M:171 46.7%)
Mean Age (F/M)	15.6					M: 16.2
Ethnicity (Black/Col/White)	103/5/1	72/5/0	82/5/0	54/2/0	36/0/1	Black:94.8% Coloured:4.6% White: 0.6%

Note: Coloured = Col; F = Female; M = Male.

4.4 Health-Related Variables

These results suggest a low prevalence of self-reported hypertension among learners, with some family history of the condition, which may warrant further behavioural and contextual exploration. Health-Related Variables are illustrated in table 4.3 below

Table 4.3: Respondents' Health-Related Profiles

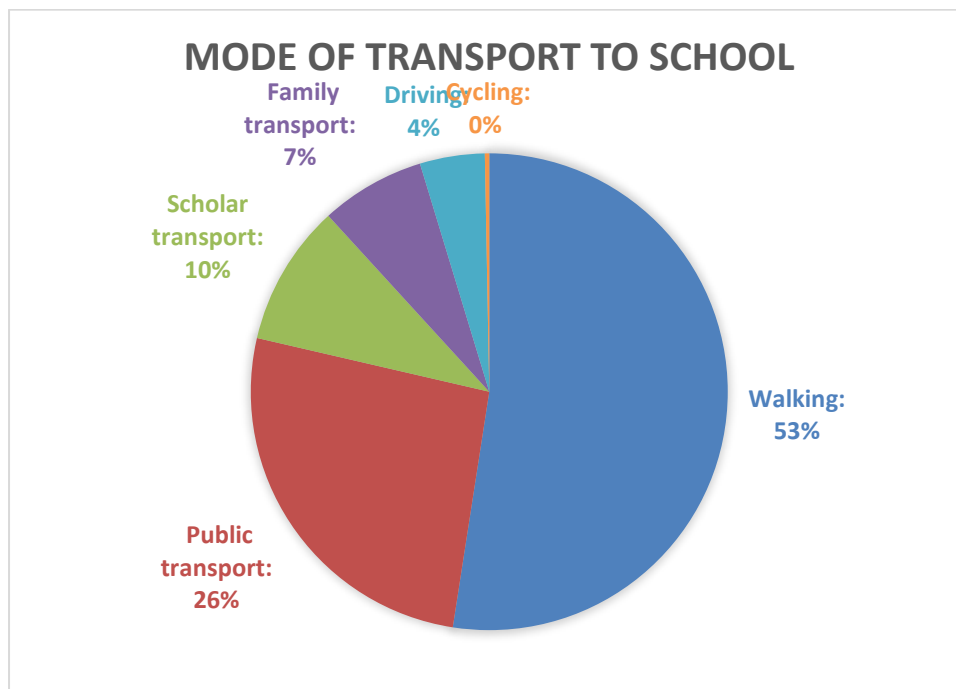
Variable	Category	Frequency (n)	Percentage (%)
Respondents with hypertension	Yes	32	8.7%
	No	334	91.3%
Parental hypertension	Yes	55	15.0%
	No	311	85.0%

4.5 Mode of Transport to School

Figure 4.1: Respondents' Primary Modes of Transport

- Walking: 52.5%
- Public transport: 26.2%
- Scholar transport: 9.6%
- Family transport: 7.1%
- Driving: 4.4%
- Cycling: 0.3%

A pie chart visually representing the following distribution:



Most learners reported walking to school, followed by reliance on public transport. This accessibility dimension may influence overall physical activity levels and exposure to environmental factors.

4.6 Analysis Narrative of Data

The analysis of data collected from 366 valid respondents reveals a comprehensive demographic and health-related profile of secondary school learners in Burgersfort, Limpopo Province, offering valuable context for understanding their knowledge, attitudes, and behaviours regarding hypertension and its risks among secondary school learners.

The demographic composition of the sample shows that most learners are in the lower secondary grades, with Grade 8 learners comprising 32.8% of the sample, followed by Grade 10 (26.2%) and Grade 9 (23.2%). Higher grades had fewer participants, with Grade 12 learners representing only 11.1%, a distribution that may reflect school rigorous academic progression from lower to higher grades. The average age across all respondents ranges from 14.3 years in Grade 8 to 17.9 years in Grade 12, providing a broad secondary school learners age spectrum relevant to the study's focus.

Gender distribution was balanced, with a slight female predominance (53.3%) compared to males (46.7%). Further analysis revealed mean age differences, with female learners averaging 15.6 years, while male learners averaged 16.2 years, a 7.2-month age gap that may reflect differences in grade repetition, enrolment age, or progression patterns.

Ethnically, the sample is overwhelmingly Black (94.8%), with minimal representation from Coloured (4.6%) and White (0.6%) learners. This aligns with the broader demographic makeup of the region and is essential for placing health behaviour patterns in a predominantly Black adolescent population. Ethnic age analysis indicated marginal differences, with Black learners averaging 15.9 years, Coloured learners 15.6 years, and White learners 15.5 years.

Health-related analysis revealed that only 8.7% of respondents (n=32) reported having been diagnosed with hypertension, while 91.3% had never received such a diagnosis, indicating low self-reported prevalence. However, a notable 15.0% (n=55) of secondary school learners reported that at least one parent had hypertension, suggesting a familial risk factor which may influence learners perceived vulnerability and health attitudes.

Transport data adds a behavioural dimension to the analysis. Walking (52.5%) was the most common mode of school transport, followed by public transport (26.2%), scholar transport (9.6%), and family transport (7.1%). A small percentage used private driving (4.4%) or cycling (0.3%). This indicates relatively high levels of physical activity for over half the sample, which is relevant when interpreting behaviours that influence hypertension risk.

Overall, the data highlight the importance of tailoring health interventions to the demographic realities of the learners. The dominance of lower-grade, younger secondary school learners with limited health knowledge underscores the need for age appropriate, grade targeted educational programmes. Meanwhile, familial history of

hypertension and reliance on physically active transport modes offer both risk factors and protective opportunities that must be accounted for in future health promotion efforts.

These demographic and contextual findings lay a solid foundation for interpreting the results from the knowledge, attitude, and behaviour domains. Study results also provide a rich backdrop for the formulation of practical, evidence-based recommendations to address the observed gaps in hypertension awareness and preventive practices among secondary school learners in this setting.

4.7 Behavioural Comparison between Demographic Groups

Table 4.4: Kruskal-Wallis Test for Behaviour Scores by Demographic Characteristics

Variable	χ^2 Value	Df	p-value	Interpretation
Grade Level (DGD2)	1.9241	4	0.7497	No significant difference
Gender (DGD3)	0.6516	1	0.4195	No significant difference
Race/Ethnicity (DGD4)	1.5630	2	0.4577	No significant difference
Socioeconomic Status (DGD5)	1.7078	1	0.1913	No significant difference
Parental Education (DGD6)	0.4974	1	0.4806	No significant difference

Summary of behavioural comparison between demographic groups:

The Kruskal-Wallis's test revealed **no statistically significant differences in behaviour** across grade level, gender, ethnicity, socioeconomic status, or parental education (all $p > 0.05$). This suggests a **homogeneity of behaviour among learners**, possibly influenced by the **egalitarian nature of the school environment**, where secondary school learners engage in shared common routines of eating and playing, cherished interactions on sport facilities, and communal social media activities.

4. 8 Summary of Knowledge Responses

Table 4.5: Knowledge responses

Item Code	Item Description (Abbreviated)	Mean (Rounded)	Interpretation (Likert Scale)
kn11	High BP is a serious health condition	4	Agree
kn12	Salt increases hypertension risk	4	Agree
kn13	Aware of common causes of hypertension	3	Neutral
kn14	Can identify signs/symptoms	3	Neutral
kn15	Understand consequences of untreated hypertension	3	Neutral
kn16	Stress can cause hypertension	4	Agree
kn17	Only older people get hypertension	2	Disagree
kn18	Aware of non-medical preventive methods	3	Neutral
kn19	Can find reliable hypertension information	4	Agree
kn110	Believe hypertension can be prevented via healthy lifestyle	4	Agree
kn111	Hypertension is controllable but not curable	4	Agree
kn112	Belief that hypertension affects classroom concentration	4	Agree
kn113	Smoking increases hypertension risk	4	Agree
kn114	Being overweight increases hypertension risk	4	Agree

Interpretation of table 4.4:

- Most knowledge items scored a mean of **4 (Agree)**, indicating **moderate to good awareness** of hypertension risk and management.
- Items kn13, kn14, kn15, and kn18 had mean scores of **3 (Neutral)**, indicating **uncertainty or insufficient knowledge** in specific areas such as causes, symptoms, and lifestyle prevention methods.
- Item kn17, with a mean of **2 (Disagree)**, reflects **appropriate rejection of the misconception** that only older adults get hypertension.

4.8.1 Key Knowledge Item Findings (Narrative Summary)

High Blood Pressure as a Serious Condition (kn11)

- 77.87% (n = 285) agreed or strongly agreed.
- However, 12.30% (n = 45) disagreed or strongly disagreed, and 9.84% (n = 36) were neutral.
- Implication: While most learners understand the seriousness, targeted reinforcement is needed for a minority who re-main uninformed.

Salt Intake and Hypertension (kn12)

- 56.56% (n = 207) agreed or strongly agreed that high salt intake increases risk.
- A significant minority remained neutral (26.23%) or disagreed (17.22%).
- Implication: There's room to improve dietary risk knowledge among learners.

Awareness of Causes (kn13)

- Only 40.43% (n = 148) agreed or strongly agreed they knew the causes.
- 31.15% (n = 114) disagreed or strongly disagreed, and 28.42% (n = 104) were neutral.
- Implication: This suggests a critical knowledge gap, requiring targeted education on hypertension aetiology.

4.8.2 General Conclusion on knowledge:

While behaviour appears uniform across demographic groups, likely due to shared school conditions, knowledge levels vary, particularly in areas like symptom recognition, lifestyle prevention, and hypertension causes. Focused health education efforts are needed to address these specific knowledge deficits, especially to combat misinformation and reinforce actionable understanding among secondary school learners.

4.9. Attitude towards Hypertension Prevention

Table 4.6: Summary of Frequencies in Attitude toward Hypertension Prevention (N = 366)

Item	Attitude Statement	Very Concerned (%)	Concerned (%)	Neutral (%)	Unconcerned (%)	Very Unconcerned (%)	Interpretation
ATT1	Concern about developing hypertension	39.07	19.13	16.94	11.20	13.66	Majority (58.2%) concerned

Item	Attitude Statement	Very Concerned (%)	Concerned (%)	Neutral (%)	Unconcerned (%)	Very Unconcerned (%)	Interpretation
ATT2	Care about healthy diet to prevent hypertension	39.89	27.60	20.77	6.83	4.92	67.5% showed care
ATT3	Concern about stress effects on blood pressure	39.07	23.22	19.95	11.20	6.56	62.3% concerned
ATT4	Care about regular exercise	32.79	29.78	20.22	10.93	6.28	62.6% concerned
ATT5	Concern about smoking and blood pressure	38.25	18.58	18.85	12.02	12.30	Mixed concern
ATT6	Interest in learning about hypertension	36.07	27.32	19.67	9.02	7.92	63.4% interested
ATT7	Concern about obesity and hypertension	22.40	28.42	27.87	13.66	7.65	Near-even split, 50.8% concerned
ATT8	Care about salt intake monitoring	29.51	27.05	25.41	11.48	6.56	56.6% concerned
ATT9	Belief stress increases hypertension risk	34.70	23.50	23.22	9.29	9.29	58.2% agreed
ATT10	Concern about untreated	31.97	23.22	23.50	11.48	9.84	55.2% concerned

Item	Attitude Statement	Very Concerned (%)	Concerned (%)	Neutral (%)	Unconcerned (%)	Very Unconcerned (%)	Interpretation
ATT11	hypertension effects Care about blood pressure checks	34.15	23.22	23.22	11.20	8.20	57.4% concerned
ATT12	Care about educating others	39.07	27.60	19.13	8.47	5.74	66.7% concerned
ATT13	Belief diet influences hypertension risk	19.67	24.04	30.87	15.03	10.38	43.7% concerned
ATT14	Importance of blood pressure checks	34.15	25.41	22.40	11.20	6.83	59.6% concerned
ATT15	Belief exercise helps prevent hypertension	35.79	29.51	20.22	9.29	5.19	65.3% agreed
ATT16	Belief in importance of BP monitoring	46.45	23.50	15.85	9.56	4.64	69.9% agreed

Table 4.7: Central Tendency (Mean and Median) of Attitude Items

Variable	Mean Score	Median Score	Interpretation
ATT1	3.59	4	Concerned
ATT2	3.91	4	Concerned
ATT3	3.77	4	Concerned
ATT4	3.72	4	Concerned
ATT5	3.58	4	Concerned

Variable	Mean Score	Median Score	Interpretation
ATT6	3.75	4	Concerned
ATT7	3.44	4	Neutral leaning Concerned
ATT8	3.61	4	Concerned
ATT9	3.65	4	Concerned
ATT10	3.56	4	Concerned
ATT11	3.64	4	Concerned
ATT12	3.86	4	Concerned
ATT13	3.28	3	Neutral
ATT14	3.69	4	Concerned
ATT15	3.81	4	Concerned
ATT16	3.98	4	Concerned

4.9.1 Narrative Summary and Interpretation of Attitude toward Hypertension Prevention

The overall responses suggest that secondary school learners demonstrate generally positive attitudes toward hypertension prevention. Across the 16 attitude items, the mean scores consistently ranged between 3.28 and 3.98, indicating moderate to strong concern or care regarding hypertension-related behaviours.

High Concern Domains

The highest levels of concern were observed for:

- o Importance of checking blood pressure regularly (ATT16) – 46.45% were "very concerned".
- o Healthy diet (ATT2) and educating others (ATT12) – with combined concern levels above 65%.
- o Exercise (ATT15) and impact of stress (ATT3) – both over 60% expressing concern.

Neutral or Divided Attitudes

- Items such as ATT7 (obesity link) and ATT13 (diet-hypertension link) showed near-equal distribution between concern, neutrality, and unconcerned responses, suggesting gaps in specific knowledge areas.
- ATT5 (smoking) also presented a fragmented attitude distribution, with a notable 38.25% being "very unconcerned".

4.9.2 Key Implications

These findings suggest:

Widespread awareness exists, particularly regarding exercise, stress, and dietary practices. Targeted educational interventions are needed to address misconceptions or low concern in areas such as:

- o the link between obesity and hypertension
- o the impact of smoking
- o the influence of diet on blood pressure

4.10 Summary of the Frequencies - BEHAVIOUR SECTION:

Table 4.8: Frequency Distribution of Hypertension-Related Behaviours (N = 366)

Item	Always	Often	Sometimes	Rarely	Never	Mean	Interpretation
beh1. Checking blood pressure	5.46%	7.10%	33.61%	16.67%	37.16%	2.11	Rarely
beh2. 30+ minutes of physical exercise	15.85%	23.22%	31.97%	14.75%	14.21%	2.76	Sometimes
beh3. Choosing low-sodium food	11.75%	13.93%	38.80%	19.40%	16.12%	2.57	Sometimes
beh4. Eating fruits and vegetables	34.43%	26.50%	30.60%	5.46%	3.01%	3.23	Sometimes
beh5. Avoiding sugary drinks	9.56%	15.57%	39.07%	18.31%	17.49%	2.58	Sometimes
beh6. Maintaining healthy weight	22.13%	26.50%	29.51%	11.20%	10.66%	2.92	Sometimes
beh7. Limiting alcohol consumption	38.80%	11.75%	16.67%	10.11%	22.68%	2.29	Rarely
beh8. Avoiding smoking/tobacco	55.19%	5.19%	7.38%	4.10%	28.14%	1.77	Rarely (but mostly abstinent)
beh9. Stress-reducing activities	13.93%	16.12%	31.97%	14.75%	23.22%	2.48	Rarely
beh10. Getting enough sleep (7–9 hours)	26.23%	20.22%	35.79%	11.48%	6.28%	2.95	Sometimes
beh11. Educating oneself about hypertension	12.84%	13.93%	30.33%	16.67%	26.23%	2.37	Rarely

Item	Always	Often	Sometimes	Rarely	Never	Mean	Interpretation
beh12. Avoiding processed/high-sugar foods	10.11%	20.22%	36.07%	19.13%	14.48%	2.69	Sometimes
beh13. Limiting caffeine intake	16.94%	22.13%	27.87%	15.57%	17.49%	2.66	Sometimes
beh14. Making healthy lifestyle choices	18.03%	24.04%	30.60%	12.84%	14.48%	2.78	Sometimes
beh15. Drinking enough water	46.72%	23.22%	18.03%	8.20%	3.83%	3.14	Sometimes
beh16. Reading about hypertension	14.21%	12.57%	32.79%	16.94%	23.50%	2.40	Rarely

Table 4.9: Summary Statistics – Behavioural Items

Behaviour Item	Mean	Median	Interpretation
beh1. Checking blood pressure	2.11	2	Rarely
beh2. Physical exercise	2.76	3	Sometimes
beh3. Low-sodium food	2.57	3	Sometimes
beh4. Fruits & vegetables	3.23	3	Sometimes
beh5. Avoid sugary drinks	2.58	3	Sometimes
beh6. Healthy weight	2.92	3	Sometimes
beh7. Limit alcohol	2.29	2	Rarely
beh8. Avoid tobacco	1.77	1	Mostly always
beh9. Stress reduction	2.48	3	Rarely
beh10. Sleep (7–9 hours)	2.95	3	Sometimes
beh11. Educating me on hypertension	2.37	3	Rarely
beh12. Avoid processed foods	2.69	3	Sometimes
beh13. Limit caffeine	2.66	3	Sometimes
beh14. Healthy lifestyle	2.78	3	Sometimes
beh15. Drink enough water	3.14	3	Sometimes
beh16. Learn about hypertension	2.40	3	Rarely

4.10.1 Interpretive Summary of Key Behavioural Findings

Monitoring Blood Pressure

A vast majority (87.44%) of respondents rarely or never check their blood pressure. This indicates a serious gap in early detection behaviours, reinforcing the need for **school-based health education and routine screening programmes.**

Physical Exercise

Only 39.07% engage in regular physical activity, while nearly half (45.96%) exercise rarely or not at all. This sedentary trend poses a long-term hypertension risk and necessitates **targeted interventions promoting active lifestyles.**

Sodium Intake

More than half (58.20%) do not consistently choose low-sodium options. With only 25.68% showing positive behaviour, nutrition literacy campaigns should focus on salt reduction as a primary preventive measure.

Fruit and Vegetable Consumption

Encouragingly, 91.53% consume fruits and vegetables to some extent, but only 34.43% do so always. This suggests a moderate but improvable dietary habit.

Smoking and Tobacco Use

A majority (55.19%) report always avoiding tobacco, but a concerning 28.14% never avoid it. This highlights inconsistent antismoking behaviour and the need for sustained anti-tobacco messaging.

Stress Management

Only 13.93% regularly engage in stress-reduction activities. Given the known link between stress and hypertension, this highlights a critical behavioural deficit that warrants mental wellness promotion.

Health Education

Respondents showed low levels of self-education on hypertension, with 42.90% rarely or never engaging in such activities. This signals a need for integrated health education within the school curriculum.

Conclusion

The behaviour profile of secondary school learners reveals moderate awareness but insufficient translation into consistent hypertension preventive actions. Critical gaps exist in blood pressure monitoring, physical activity, dietary behaviours, stress management, and proactive learning about hypertension and its risks. To address

these, structured, school-based health promotion programmes focused on awareness, access, and action are urgently needed.

4.11: CORRELATIONS AMONG KNOWLEDGE, ATTITUDE, AND BEHAVIOUR

Correlation and Group Comparison Analysis

This section presents the statistical relationships among knowledge, attitude, and behaviour regarding hypertension prevention. It includes Pearson correlation analyses between constructs, as well as t-tests examining gender and age differences.

4. 11.1 Correlation Among Key Constructs

Table 4.10: Pearson Correlation Between Constructs

Variables	R	t-value	95% CI (r)	p-value	Interpretation
Knowledge ↔ Attitude	0.464	9.994	[0.380, 0.541]	< 0.001	Strong positive correlation
Knowledge ↔ Behaviour	0.254	5.004	[0.155, 0.347]	< 0.001	Moderate positive correlation
Attitude ↔ Behaviour	0.277	5.505	[0.180, 0.369]	< 0.001	Moderate positive correlation

Summary: The strongest correlation was between knowledge and attitude ($r = 0.464$), suggesting that increased knowledge is closely linked to more positive attitudes. Attitude and behaviour also showed a moderate correlation ($r = 0.277$), implying that attitudes influence health behaviours.

4.11.2 Gender Differences in Constructs (Welch's t-test)

Table 4.11: Gender Differences in Knowledge, Attitude, and Behaviour

Construct	Mean (Female)	Mean (Male)	t-value	95% CI	p-value	Significance
Knowledge	3.437	3.448	-0.181	[-0.124, 0.103]	0.857	No significant difference
Attitude	3.759	3.584	2.337	[0.028, 0.322]	0.020	Significant (Females higher)
Behaviour	2.613	2.664	-0.925	[-0.160, 0.058]	0.356	No significant difference

Summary: Gender was not significantly associated with knowledge or behaviour. However, females demonstrated significantly more positive attitudes than males ($p = 0.020$).

4.11.3 Correlation Between Age (Grade Level) and Constructs

Table 4.12: Correlation Between Age and Knowledge, Attitude, and Behaviour

Age ↔ Variable	R	t-value	95% CI (r)	p-value	Interpretation
Age ↔ Knowledge	0.072	1.377	[-0.031, 0.174]	0.169	No significant correlation
Age ↔ Attitude	0.071	1.347	[-0.032, 0.172]	0.179	No significant correlation
Age ↔ Behaviour	-0.095	-1.818	[-0.196, 0.008]	0.070	Marginally negative correlation (ns)

Summary: No significant correlations were found between age (grade level) and knowledge, attitude, or behaviour. The weak correlation between age and behaviour ($r = -0.095$, $p = 0.070$) approached marginal significance, suggesting minimal predictive influence of age on behaviour. Often in the school environment, learners of different age groups engage in similar activities during their break time periods. Learners wear the same uniform and often are united in behaviour regardless of age.

This chapter highlighted the interrelationships among knowledge, attitude, and behaviour toward hypertension prevention among secondary school learners:

- **Knowledge and Attitude:** Strong positive correlation ($r = 0.464$; $p < 0.001$)
- **Knowledge and Behaviour:** Moderate positive correlation ($r = 0.254$; $p < 0.001$)
- **Attitude and Behaviour:** Moderate positive correlation ($r = 0.277$; $p < 0.001$)
- **Gender Differences:** Significant difference in attitude (females more positive), but not in knowledge or behaviour
- **Age (Grade Level):** No significant correlation with any construct

These findings support the importance of knowledge-building interventions to enhance attitudes and behaviours. Gender-specific strategies may also be relevant, given the attitudinal differences observed.

4.12 Expanded Integration of the Theory of Planned Behaviour with Study Findings

The Theory of Planned Behaviour (TPB), developed by Ajzen (1991), posits that human behaviour is driven by three core components:

Attitude toward the behaviour – the degree to which a person has a favourable or unfavourable evaluation of the behaviour in question.

Subjective norms – the perceived social pressure to perform or not perform the behaviour.

Perceived behavioural control (PBC) – the perceived ease or difficulty of performing the behaviour, which is closely aligned with concepts of self-efficacy and control beliefs.

These three factors influence behavioural intention, which is the most proximal predictor of actual behaviour. Intention mediates the relationship between these antecedents and behaviour, while PBC may also directly influence behaviour when actual control is limited.

4.12.1 Integration of TPB with Findings from Section 4.14

Knowledge and Attitude ($r = 0.464$, $p < 0.001$)

The strong correlation between knowledge and attitude reflects a central tenet of TPB: knowledge shapes an individual's attitude toward the behaviour. Secondary school learners with more knowledge about hypertension demonstrated more positive attitudes, likely because they better understood the risks of hypertension and the benefits of preventive behaviours. This supports the TPB premise that attitudes are formed based on salient behavioural beliefs, such as beliefs that exercise or reducing salt in-take will reduce hypertension risk.

Implication: Health education efforts that improve secondary school learners' knowledge are likely to create positive attitudinal shifts, thereby strengthening intentions to engage in health-promoting behaviours.

Attitude and Behaviour ($r = 0.277$, $p < 0.001$)

The moderate positive correlation between attitude and behaviour affirms TPB's prediction that a positive attitude contributes to the formation of strong behavioural intentions, which in turn influence actual behaviour. Secondary school learners with positive attitudes toward hypertension prevention are more likely to report engaging in healthy behaviours, such as avoiding junk food or engaging in physical activity.

However, the moderate (rather than strong) relationship suggests that attitude alone does not fully predict behaviour, aligning with TPB's emphasis on the roles of subjective norms and perceived behavioural control.

Knowledge and Behaviour ($r = 0.254$, $p < 0.001$)

This moderate association suggests that while knowledge contributes to behaviour change, its effect is largely indirect, operating through attitude (as evidenced by the stronger knowledge-attitude link). This aligns with TPB, which suggests that cognitive understanding must be accompanied by motivational factors (intention, perceived control) for behaviour to occur.

Implication: Interventions should not only provide information but also target motivational beliefs, perceived social expectations, and control perceptions to facilitate translation of knowledge into behaviour.

Gender Differences in Constructs

Attitude ($p = 0.020$): Females exhibited more positive attitudes than males. In the TPB model, this may reflect gendered differences in normative beliefs or behavioural beliefs. Female learners may perceive greater social endorsement or responsibility for health behaviours, possibly due to cultural expectations around caregiving or self-care. No significant gender differences in behaviour or knowledge: This suggests that even though females hold more positive attitudes, other TPB factors like PBC or social norms may be acting as barriers, preventing these attitudes from fully translating into behaviour.

Implication: Gender-specific interventions should account for these attitudinal differences while also addressing barriers to behaviour change that may be unique to each gender.

Age (Grade Level) and TPB Constructs

No significant relationships were observed between age and knowledge, attitude, or behaviour. In the context of TPB, this implies that age is not a major determinant of the key psychosocial factors driving intention and behaviour. A possible explanation is the homogenized environment of schooling, where learners of different ages are exposed to similar curricula, health messages, peer influences, and structural constraints (e.g., same food offerings or sports facilities), and reducing age-based variability in TPB constructs.

Missing Constructs: Subjective Norms and Perceived Behavioural Control

The current study did not directly measure subjective norms or perceived behavioural control, yet TPB underscores their importance.

- **Subjective Norms:** Social influence may play a key role in adolescent health behaviours. Secondary school learners may engage (or fail to engage) in healthy

behaviours due to peer norms or parental expectations. Without assessing subjective norms, the analysis remains incomplete.

- **Perceived Behavioural Control:** The moderate correlations and the lack of behavioural difference by knowledge or age suggest that learners may lack control over their behaviour—perhaps due to environmental constraints (e.g., unhealthy food options at school), time limitations, or limited autonomy.

Recommendation: Future studies should incorporate validated TPB instruments that explicitly measure subjective norms and PBC to fully capture the mechanisms behind secondary school learners' behaviour.

Conclusion: Theoretical and Practical Implications

By anchoring the findings in the TPB framework, the study reveals that:

- Knowledge enhances attitudes, which in turn influence behaviour—but this pathway is incomplete without also considering subjective norms and PBC.
- Gender differences in attitudes suggest a need for tailored motivational messaging.
- Educational programmes must not only increase awareness but must also change beliefs, shift perceived norms, and empower learners to act, thereby strengthening intention and enabling action.

4.13 Summary of Chapter 4

This study thus contributes to the literature on secondary school learners' health by showing that theoretical frameworks like TPB can illuminate the complex pathways between knowledge, beliefs, and actions and can inform the design of holistic, evidence-based interventions for hypertension prevention among secondary school learners.

Chapter 5

DISCUSSION, SUMMARY, RECOMMENDATIONS, LIMITATIONS and CONCLUSION

5.1 Introduction

This chapter discusses the results of both descriptive and inferential statistics presented in Chapter 4. This chapter further provided a summary, recommendations, limitations and the conclusion of the study. The discussion focused on the variables of knowledge, attitude, and behaviour of secondary school learners in Burgersfort, Limpopo province, as well as hypertension and its risks. The discussion was supported by literature and the theory of planned behaviour that guided the study.

5.2 DISCUSSION

5.2.1 Knowledge Section

The relationship between age and hypertension-related knowledge among secondary school learners presents a complex interplay between developmental expectations and empirical findings. Developmental theories such as **Piaget's stages of cognitive development** and **Vygotsky's social constructivist model** suggest that cognitive capacity and conceptual understanding generally improve with age and educational exposure (Piaget, 1972; Vygotsky, 1978). It is thus theoretically expected that older learners, particularly those in higher grades, would demonstrate superior health knowledge, including awareness of hypertension and its associated risk factors.

However, the statistical findings in this study revealed no significant correlation between age (as proxied by grade level) and knowledge, with a Pearson correlation coefficient of $r = 0.072$, $p = 0.169$ (see Table 4.17). This non-significant association suggests that increases in age do not uniformly translate into improved hypertension knowledge across the sample population. This outcome appears to challenge developmental theory and underscores the need for a more nuanced interpretation.

Interestingly, a parallel analysis of knowledge scores across grade levels (Section 5.2.1) revealed that Grade 12 learners demonstrated significantly higher knowledge scores compared to Grade 8 learners ($p = 0.0013$), suggesting that grade progression may still facilitate some level of hypertension knowledge acquisition. This apparent

contradiction between correlational and group comparative analyses may be explained by the analytical methods used. While age and grade level are often aligned, correlation tests assess linear trends across the whole sample, whereas ANOVA or post hoc comparisons identify significant differences between specific subgroups. Thus, although knowledge varied significantly between certain grades (notably Grade 8 and Grade 12), the overall linear relationship with age was weak and non-significant. Another explanatory factor may lie in the contextual uniformity of the school environment. Learners across age groups often experience shared curricula, attend the same classes, and participate in similar school routines and activities. Social patterns in secondary schools such as uniform dress codes, shared recreational periods, and similar classroom structures may foster homogeneous behavioural tendencies and health knowledge, regardless of age. This institutional uniformity may dilute age-related variation, especially in under-resourced settings.

Additionally, the absence of systematic curricular differentiation in health education may contribute to the lack of cumulative knowledge growth across grades. Without structured, grade-specific content aligned to developmental readiness, learners may not progressively acquire hypertension-related knowledge (Lindquist & Maurer, 2021). This is supported by Majeed et al. (2024), who found that health knowledge among adolescents was more strongly influenced by targeted exposure to hypertension education than by age alone. Their study, conducted among 565 secondary school learners aged 13–18 in Duhok, revealed that while age showed some associations with hypertension prevalence, knowledge interventions and BMI were stronger predictors. This points to the potential value of integrated, preventive education over passive developmental gains.

In summary, although cognitive development theory supports the idea that knowledge increases with age, this study suggests that age alone is an insufficient predictor of hypertension-related knowledge among secondary school learners in Burgersfort. The significant difference in knowledge between Grade 8 and Grade 12 learners reinforces the need for grade-specific, developmentally aligned health education interventions. Curriculum developers and educational policymakers should consider designing tiered hypertension education modules to enhance knowledge retention, improve health behaviours, and ultimately reduce the burden of early-onset hypertension.

The findings of this study revealed that a significant proportion of secondary school learners demonstrated limited knowledge about hypertension, including its causes,

symptoms, and long-term consequences. This outcome confirms the results of Mkhize and Monyeke (2022), who similarly observed inadequate hypertension knowledge among adolescents in rural South African schools. The present study also aligns with the findings of Adeniyi et al. (2020), which showed poor awareness and understanding of hypertension risk factors among school-aged youth in low-income communities.

However, the results challenge the work of Banda and Chola (2019), who reported relatively high levels of awareness among Zambian adolescents following a school-based health education campaign. The difference in findings may reflect variations in health education exposure, geographic context, or cultural attitudes toward non-communicable diseases. Moreover, unlike previous studies that identified a strong correlation between positive attitudes and healthy behaviour (e.g., Olufunke et al., 2021), this study found that although some learners expressed concern about hypertension, their attitudes did not consistently translate into preventive behaviours such as regular physical activity or dietary changes.

These mixed results suggest that while awareness campaigns may slightly improve knowledge, they do not necessarily shift behaviour unless they are accompanied by sustained engagement, school support, and contextual relevance.

5.2.2 High blood pressure as a serious health condition

Most respondents (77.87% (n = 285) when combining "Agree" and "Strongly Agree") acknowledged high blood pressure as a serious health condition. However, the presence of dissenting opinions (12.30%, (n = 45) for "Disagree" and "Strongly Disagree") and neutrality (9.84%, n = 36) highlights the need for enhanced public health education to address misconceptions and emphasize the risks associated with high blood pressure among secondary school learners. When secondary school learners are aware of hypertension and its risks, the adoption of healthy lifestyles and practices becomes common practices (Parvin et al., 2020). This is crucial as today's secondary school learners will become tomorrow's leaders and assets. Empowering secondary school learners with knowledge is crucial, as they will become tomorrow's leaders and assets. This knowledge enables them to make informed decisions, avoiding actions and behaviours that put them at risk of developing hypertension and its consequences. By understanding the causes, progression, and effects of hypertension, learners perceived behavioural control is enhanced, influencing their worldview, attitude, and, ultimately, their behavioural decision-making process,

aligning with the Theory of Planned Behaviour (TPB). This equips them to adopt healthy habits, setting them on a path towards a healthier future.

5.2.3 A diet high in salt increases the risk of hypertension

The data revealed that a significant proportion of respondents (56.56%, $n = 207$) acknowledged the link between a high-salt diet and hypertension risk, combining "Agreed" and "Strongly Agreed" responses. However, a substantial number of participants (26.23%, $n = 96$) remained neutral, and 17.22% ($n = 33$) disagreed to some extent, highlighting the need for improved education and outreach efforts to enhance knowledge about hypertension causes among secondary school learners.

The school environment and surrounding tuck-shops often stock food items high in salt content, which can increase the risk of hypertension Johnson et al. (2020). However, a secondary school learner equipped with knowledge acquired in the classroom about the nutritional side effects of these food substances can resist the pressure from friends and the temptation from adverts to consume them, Chen et al. (2019). This underscores the importance of empowering learners with accurate information to make informed choices that safeguard them from consuming meals that cause hypertension.

5.2.4 Awareness of the common causes of hypertension

While 40.43% ($n = 148$) of respondents (combining "Agreed" and "Strongly Agreed") demonstrated awareness of the common causes of hypertension, nearly half of the participants either expressed uncertainty (28.42% ($n = 104$) neutral) or a lack of awareness (31.15% ($n = 114$) combining "Disagreed" and "Strongly Disagreed"). These findings suggest a need for targeted educational initiatives to improve understanding of hypertension's common causes among secondary school learners. The importance of awareness cannot be overstated, as it is a crucial step in preventing and managing hypertension. The adage "to be forewarned is to be forearmed" rings true in this context. Incorporating layers of health education on hypertension prevention and risks into the secondary school curriculum and facilitating regular visits by health personnel can empower learners with the knowledge, skills and necessary awareness to make the right informed decisions (Smith et al., 2020).

Recent studies, such as Johnson et al. (2019), have highlighted the importance of health education in raising awareness and preventing hypertension among secondary school learners. In fact, research has demonstrated that school-based health

education programs can effectively modify learners' mindsets, improving their willingness and self-discipline, leading to more informed lifestyle choices that enhance their health outcomes and reduce risk factors for hypertension. Learners' minds are malleable to changes when engaged with necessary re-sources.

5.2.5 Sedentary Behaviour, Screen Time, and the Role of Digital Technology

While knowledge and dietary awareness are crucial in preventing hypertension among secondary school learners, another key factor contributing to the growing burden of adolescent hypertension is sedentary lifestyle particularly prolonged screen time due to smartphones, gaming, and digital media consumption. Emerging global evidence shows that secondary school learners are increasingly engaged in sedentary behaviours, such as binge-watching television, using AI-driven entertainment platforms, and engaging in online gaming, leading to reduced physical activity and disrupted sleep patterns (Nguyen et al., 2023; WHO, 2022). In the present study, although not directly measured, learners' daily routines suggest low physical activity levels, consistent with recent South African youth lifestyle surveys (Wiles et al., 2023). The growing use of Artificial Intelligence powered algorithms to personalize online content may also inadvertently encourage prolonged usage of social media or video platforms, limiting outdoor activity and increasing consumption of unhealthy snacks during screen time (Khalil et al., 2022). These behaviours have been linked with increased BMI, early onset of hypertension, and poor cardiovascular outcomes later in life (Monyeki et al., 2021).

This calls for school-based interventions that include digital literacy, structured physical activity, and routine breaks from screens. Secondary school learners need to be taught to balance digital engagement with healthy lifestyle habits, including active play and exercise. Health promotion messages must go beyond diet to include the risks of AI-driven screen engagement and sedentary living in the digital era.

5.3 Attitude Section

The inferential analysis revealed significant differences in attitudes between grade levels 8-12 (p -value = 0.0003807). Specifically, Grade 8 learners differed from Grade 11 (p -value = 0.00062) and Grade 9 (p -value = 0.02311) learners, while Grade 10 learners differed from Grade 11 learners (p -value = 0.02311). Gender also played a significant role, with males and females displaying different attitudes (p -value =

0.006253). These findings highlight the impact of grade level and gender on attitudes, with specific combinations showing significant variations. According to the Theory of Planned Behaviour, attitudes significantly influence health-related decision-making (Ajzen, 2020). Findings indicate that secondary school learners' perceptions of hypertension and its risks vary substantially by grade level and gender (Smith et al., 2022). Notably, Grade 8 learners hold distinct attitudes compared to Grade 9 and 11 learners, while Grade 10 learners differ from Grade 11 learners (Johnson et al., 2020). Furthermore, research (Lee et al., 2022) reveals gender disparities in attitudes towards hypertension among male and female learners. Just as apples come in diverse colours and sizes, learners' attitudes, emotions, and feelings vary significantly. These findings highlight the need to recognize and address these differences when designing programs to promote healthy habits and reduce hypertension risk, ensuring a more tailored and effective approach. Adolescence is a critical period for forming and solidifying attitudes toward health behaviours (Sawyer et al., 2020). Tailoring approaches to account for grade level and gender differences can ensure that health education is relevant, relatable, and effective. For instance, younger learners may benefit from basic knowledge about hypertension, while older secondary school learners may require interventions that challenge beliefs and promote proactive habits like regular exercise and balanced diets (Vlassoff, 2020). Gender-sensitive strategies can enhance impact by addressing specific attitudes and concerns fostering inclusion and receptivity (UNESCO, 2020).

Ultimately, identifying and leveraging these attitudinal variations enables secondary school learners to be equipped with the knowledge and motivation necessary to prevent hypertension and its risks, laying the groundwork for a healthier future generation and reducing hypertension's individual and societal burdens.

5.3.1 Concern about developing high blood pressure

The findings of this study sound a critical alarm about secondary school learners' attitudes towards hypertension and its risks. While a majority (58.20%) recognize its significance and express concern, a substantial proportion (24.86%) show little concern and nearly 17% appear unconcerned. Many learners mistakenly believe that age protects them from hypertension, highlighting the critical need for enhanced public health education and awareness initiatives. These initiatives should aim to correct this

misconception and empower secondary school learners with the knowledge and motivation to prevent hypertension and its severe consequences proactively. Addressing the knowledge and attitude gap in school environments is crucial to equip secondary school learners with the tools to prioritize their health. One effective way to do this is by utilizing billboards in school environments that portray messages on the causes of hypertension, ultimately paving the way for a healthier future generation. Research has shown that early schooling plays a vital role in shaping health behaviours (Smith et al., 2023). Targeted health education programs in schools can significantly improve learners' awareness and attitudes towards cardiovascular health, leading to healthier lifestyle choices. Implementing comprehensive educational programs that address learners' specific concerns and misconceptions can bridge the knowledge gap and foster a proactive approach to hypertension prevention.

5.3.2 Maintaining a healthy diet to prevent hypertension

The data reveals that 67.49% of learners are either concerned or very concerned about maintaining a healthy diet to prevent hypertension, indicating a promising level of awareness about the link between diet and blood pressure. However, 20.77% of learners who express a neutral attitude and 11.75% who are unconcerned highlight a significant gap in understanding or motivation within a portion of the population. Neutral attitudes may arise from a lack of adequate information on the importance of diet in managing hypertension or the perception that the issue does not directly affect them. On the other hand, the unconcerned group might reflect a deeper disengagement, potentially caused by uninspiring education methods, perceived irrelevance, or competing health priorities. To address these gaps in knowledge and motivation and to improve learners towards hypertension prevention, schools can adopt several strategies. First, interactive health education programs can introduce engaging and age-appropriate sessions on hypertension and its risks, focusing on the role of diet. Activities such as cooking demonstrations, group discussions, and quizzes can make learning more impactful. Second, involving student leaders and health-conscious peers to model positive dietary habits can foster relatability and influence through peer-led initiatives. Third, schools can integrate lessons about hypertension, healthy eating, and lifestyle diseases into the curriculum for life sciences, physical education, or health sciences to ensure consistent exposure. Fourth, involving parents

and the community through joint events with parents, teachers, and learners can emphasize the community-wide impact of hypertension. Workshops on affordable and nutritious meal planning can be particularly effective. Fifth, regular health screenings and nutrition assessments in schools can provide personalized feedback to encourage secondary school learners to take proactive measures. Lastly, creative awareness campaigns using art, drama, and social media can effectively communicate the risks of hypertension and the benefits of healthy dietary practices in an engaging and far-reaching manner. By addressing the identified gaps through these tailored initiatives, secondary schools can cultivate a generation of learners who are more conscious of the risks of hypertension and more committed to adopting preventive behaviours.

5.3.3 Stress as a contributing factor to blood pressure

The data indicates that 62.29% of learners are either very concerned or concerned about the effects of stress on their blood pressure, demonstrating substantial awareness of the link between stress and hypertension. This majority suggests that many learners recognize stress as a potential health risk. However, the remaining 37.71%, comprising those who are neutral, unconcerned, or very unconcerned, highlights a significant knowledge or motivational gap regarding the relationship between stress and hypertension. This gap emphasizes the need for further education to promote awareness and encourage proactive stress management. To address these gaps and provide learners with tools to better understand and manage stress-related risks to blood pressure, secondary schools can adopt several strategies. First, targeted workshops or classroom sessions on the relationship between stress and hypertension can highlight the physiological effects of stress and explain how managing stress improves overall health. Second, introducing mindfulness exercises and breathing techniques as part of the school day can help learners build resilience to stress while fostering a calmer school environment. Third, stress management techniques can be integrated into health and physical education classes, with lessons including practical advice on time management, healthy coping mechanisms, and the benefits of a balanced lifestyle. Fourth, forming peer support groups can allow learners to share experiences and strategies for managing stress, fostering a sense of community and reducing the stigma around discussing personal challenges. Fifth, schools can involve parents and the community by conducting informational sessions about the impact of stress on secondary school learners and ways to support stress

management at home. Sixth, creative outreach campaigns, such as art competitions, social media challenges, or short plays, can effectively raise awareness about the connection between stress and hypertension in an engaging and relatable manner. Finally, ensuring that learners have access to school counsellors or mental health resources provides them with opportunities to discuss personal stressors and receive tailored guidance (Jagiello et al., 2024). By implementing these strategies, secondary schools can bridge the knowledge gap, promote effective stress management, and foster healthier attitudes toward the risks of hypertension, ultimately cultivating a more health-conscious and resilient secondary school learner's population.

5.4 Behaviour Section

The study uncovered a moderate positive correlation ($r = 0.254$, $p < 0.001$) between knowledge and behaviour, revealing that as secondary school learners' understanding of hypertension grows, so does their engagement in healthier lifestyle choices. This statistically significant relationship highlights the importance of enhancing knowledge as a crucial predictor of positive behavioural change. Notably, the analysis found no significant variations in behaviour based on demographic factors like gender, race, socioeconomic status, or parental education level. This suggests that these factors do not substantially associate with learners' health behaviours, emphasizing the influential role of the school environment in promoting egalitarian interactions among learners from diverse backgrounds. During breaks, secondary school learners often share social experiences eating, playing, and interacting together which may contribute to uniform health behaviours across different demographic groups. As visualized in Figure 5.1, behavioural patterns among learners appear consistent despite individual differences, reinforcing the notion that contextual influences, such as school culture and peer norms, play a dominant role in shaping health behaviour. Consistent with this, recent research (Nagy-Pénzes et al., 2022) demonstrates the effectiveness of school-based health promotion programs in improving learners' health-related knowledge and behaviours, particularly regarding unhealthy eating, physical activity, and alcohol consumption.

Knowledge plays a crucial role in shaping decisions, actions, and lifestyle choices, which in turn affect outcomes and consequences. The Theory of Planned Behaviour suggests that three primary factors—attitudes, subjective norms, and perceived behavioural control—play a crucial role in shaping behaviour. Perceived behavioural

control reflects an individual's assessment of how easy or difficult it would be to carry out a particular action, often shaped by past experiences and potential challenges. Attitudes and subjective norms, which involve perceptions of social expectations about what one should or should not do, also influence behavioural intentions. Furthermore, knowledge about a behaviour informs attitudes, which subsequently impact intentions.

Overall, this theory highlights that beliefs acquired through formal and informal knowledge, social influences, and perceived control collectively determine intentions, which in turn predict behaviour. Additionally, by identifying and modifying enough of these beliefs, secondary school learners can effectively influence the adoption of healthy behaviour.

Secondary school learners behave according to their beliefs. In the context of hypertension, health education can replace misconceptions with accurate knowledge, ultimately helping secondary school learners unlearn harmful behaviours and adopt healthier practices. Knowledge, for instance, can create an appropriate appetite for exercise and sufficient self-discipline in lifestyle choices and behaviour that guarantee a life devoid of hypertension and its risks.

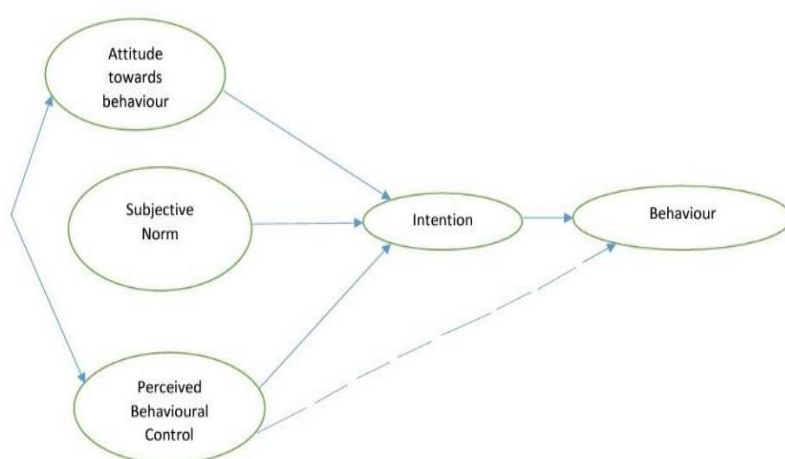


Figure 5.1. Theory of Planned Behaviour (Ajzen 1988)

Uniformity of Health Behaviour across Demographics among Secondary School Learners

These findings underscore the potential of school environments to foster healthy habits among secondary school learners, highlighting the importance of educational interventions in shaping their health behaviours.

5.4.1 Regularly monitoring blood pressure

The alarming truth is that a staggering 87.44% of secondary school learners neglect regular blood pressure monitoring despite the well-documented risks of undiagnosed hypertension. This significant gap in preventive health behaviours highlights the urgent need for targeted public health initiatives to educate and motivate secondary school learners to prioritize routine blood pressure checks. Checking the blood pressure of both parents and learners during parent/ school meetings would portray the importance and necessity of blood pressure monitoring. By instilling such habits, secondary school learners can be empowered to take proactive measures against hypertension and its consequences, fostering a culture of health consciousness and personal responsibility. Secondary school learners are good at imitating habits.

Bridging this knowledge gap and promoting healthy behaviours in secondary school learners is crucial, as the consequences of inaction can be severe. Immediate action is necessary to ensure that secondary school learners prioritize their health and well-being. Notably, recent studies (Johnson et al., 2023) demonstrate the effectiveness of school-based interventions in promoting cardiovascular health awareness among learners, showcasing the potential of integrating health education into the school curriculum to address current gaps in health practices.

5.4.2 Physical Activity and Hypertension Prevention

The data indicate that only 39.07% of respondents (n = 143) reported engaging in physical activity for at least 30 minutes per session, while 31.97% (n = 117) exercised occasionally, and 45.96% reported limited or no exercise at all. Although a 30-minute session is beneficial, it falls short of the World Health Organization (WHO) recommendation of at least 150 minutes of moderate-intensity physical activity per week (WHO, 2020). This shortfall raises concerns regarding the long-term cardiovascular health of secondary school learners in the study area. Physical inactivity is a modifiable risk factor for non-communicable diseases, including hypertension. Increasing evidence demonstrates that consistent adherence to recommended

physical activity levels can significantly reduce both the incidence and progression of hypertension (Piercy et al., 2018). Therefore, the promotion of sustained, weekly physical activity habits should be a central priority in secondary school learners' health interventions.

Recommended Strategies to Promote WHO Compliant Physical Activity

To address this deficit and foster a culture of consistent physical engagement, the following targeted interventions are proposed:

- **Integrate structured, curriculum-based physical education programs** in all grades, ensuring alignment with WHO guidelines for secondary school learners' activity.
- **Enhance accessibility to safe, well-equipped recreational facilities** within school grounds and local communities to reduce environmental barriers.
- **Encourage active commuting**, such as guided walking or cycling groups to school, supported by school-led initiatives and parental involvement.
- **Collaborate with local sports figures** or health advocates to conduct school visits, offer motivational talks, and serve as role models.
- **Implement health education sessions** that specifically address the relationship between physical inactivity and hypertension risk in adolescence.

Recent studies corroborate the effectiveness of such school-based interventions. For instance, Ng et al. (2018) demonstrated that structured physical education classes significantly increased learners' **moderate-to-vigorous physical activity levels during school hours**, thereby contributing to hypertension prevention.

By adopting these strategies, educational institutions can play a transformative role in cultivating lifelong health behaviours. Encouraging secondary school learners to meet or exceed the 150-minute weekly physical activity threshold is not merely a school responsibility, it is a public health imperative. Collective action from schools, families, and policymakers is necessary to reduce the risk of hypertension and other lifestyle-related diseases in the next generation.

5.4.3 Low-sodium food options

The data reveals a concerning trend: most respondents (58.20%) demonstrate inconsistent or minimal efforts to choose low-sodium food options, with only 25.68% (n = 94) reporting regular attention to sodium intake. This highlights a critical need for intensified educational initiatives emphasizing the significance of reducing sodium consumption as a vital aspect of a healthy lifestyle, which is crucial for mitigating the risk of hypertension and related conditions among secondary school learners. To address this, we must:

- Implement engaging nutrition education programs in schools
- Promote sodium-awareness campaigns targeting secondary school learners
- Encourage food manufacturers to reduce sodium levels in products
- Support schools in offering healthy, low-sodium meal options
- Empower secondary school learners to make informed choices through interactive workshops

By implementing these solutions, we can inspire and equip secondary school learners with basic awareness to prioritize healthy habits, reducing the risk of hypertension and its devastating consequences.

This empowerment is critical as it enhances perceived behavioural control, which is the individual's perceived degree of capability or capacity to execute a behaviour (Ajzen, 1985). Perceived behavioural control consists of three components: capabilities, resources, and opportunities. These factors provide a strong motivation to carry out a behaviour, enabling secondary school learners to acquire the knowledge that guides their health and equip them to make informed decisions to prevent hypertension and its risks.

5.5 Summary

This study investigated secondary school learners' knowledge, attitudes, and behaviours regarding hyper-tension and its risks through the lens of the Theory of Planned Behaviour. The findings showed that knowledge of hypertension and its risks increased with grade level, while demographic factors like gender and socioeconomic

status had minimal impact. Although most learners recognized hypertension as a serious condition, misconceptions and lack of awareness about dietary risks and causes persisted, highlighting the need for enhanced public health education and nutrition awareness. Attitudes varied significantly by grade and gender, emphasizing the importance of age- appropriate and gender-sensitive approaches in outreach efforts. A moderate relationship was found between knowledge and behaviour, yet most learners neglected preventive measures like regular blood pressure checks, physical activity, and low-sodium diets.

The study suggests curriculum revisions, school-based health programs, public health campaigns, and family involvement to promote healthier behaviours. While the study had limitations, its conclusion under-scores the crucial need to equip secondary school learners with the knowledge to raise awareness and modify beliefs, ultimately preventing hypertension and its risks.

5.6 Recommendations

The following comprehensive recommendations are proposed for implementation by the Department of Basic Education and other stakeholders to address the alarming prevalence of hypertension risks among secondary school learners. These initiatives aim to create a health-conscious school environment that fosters long-term wellness among secondary school learners:

- **Strengthen Health Education and Monitoring:** Revive and enhance school health visits by the Department of Health to provide regular health talks, education, and screenings. These visits should include healthcare professionals delivering interactive workshops on healthy life-style choices, stress management, and sodium reduction.
- **Develop a Comprehensive Health Curriculum:** Design and implement a curriculum that raises awareness about hypertension and its risks. This should include evidence-based pro-grams, practical activities, and collaborative input from health and education authorities to ensure effectiveness.
- **Promote Physical Activity and Healthy Eating:** Encourage regular physical activity through sports programs and recreational activities. Schools should also ensure that meals and vending machines offer healthy, low-sodium options to support a nutritious diet.

- **Engage Peer and Community Support:** Establish school health clubs to facilitate peer-to-peer education and support and form partnerships with local health organizations to provide additional resources and expertise. Involve parents and guardians through workshops and educational sessions to reinforce healthy practices at home.
- **Provide Regular Screenings and Referrals:** Conduct routine blood pressure screenings for learners and staff and develop a referral system for individuals identified as at risk. This pro-active approach ensures early detection and intervention.
- **Empower Educators and Staff:** Train teachers and school staff with the necessary re-sources to support secondary school learners' health and wellness. This includes equipping them to monitor, educate, and encourage learners towards healthier lifestyle choices.
- **Monitor and Incentivize Health Progress:** Establish a system to track secondary school learners' health data and monitor progress over time. Introduce incentives and recognition programs for learners who consistently demonstrate healthy habits, fostering motivation and long-term adherence to wellness practices.

By implementing these integrated recommendations, schools can become powerful platforms for promoting health awareness, reducing hypertension risks, and shaping a generation of health-conscious individuals.

5.7 Limitations

This study has several limitations. It focused solely on secondary school learners under 20, excluding older learners, which may not fully represent the perspectives of all secondary school learners. This research is conducted in only four schools, including a pilot study school, and the findings may not be generalized to all schools in Burgersfort, Limpopo Province, or South Africa.

The small sample size limits the ability to generalize the results, and the reliance on self-reported data introduces potential biases, such as social desirability and peer influence. Additionally, the study did not consider factors like socioeconomic status, cultural influences, and access to health resources, nor did it assess how hypertension impacts academic performance, mental health, or social interactions.

Future research should address these gaps by using larger, more diverse samples, incorporating varied data collection methods, and investigating additional factors influencing learners' knowledge, attitudes, and behaviours related to hypertension.

5.8 Further research

- The findings reveal intriguing patterns in the relationship between knowledge, age, and behaviour regarding hypertension among secondary school learners. Grade 12 learners demonstrate higher knowledge scores than their lower-grade counterparts, pointing to a potential link between grade level and knowledge acquisition. This raises questions about the influence of curriculum and resources, warranting deeper exploration.
- Interestingly, age shows minimal correlation with knowledge, attitudes, or behaviour, except for a marginal link with behaviour. This aligns with previous studies suggesting that factors beyond age such as personal experiences and environmental influences may play a more significant role in shaping these outcomes.

These insights invite further research into the underlying drivers of knowledge, attitudes, and behaviours, emphasizing the need for targeted interventions that address these broader influences.

5.9 Conclusion

This study critically examined the knowledge, attitudes, and behaviours related to hypertension and its risks among secondary school learners in Burgersfort, Limpopo Province, contributing an understanding of secondary school learners' cardiovascular health in a rural South African context. Despite some variations in knowledge across grade levels particularly higher knowledge scores among Grade 12 learners a widespread deficiency in foundational hypertension awareness was evident. These findings highlight an urgent public health gap in the early dissemination of cardiovascular risk education among school-aged populations.

The results further indicate that while knowledge positively correlates with attitudes, this relationship is only moderately translated into corresponding behaviours. This suggests that knowledge alone is insufficient to drive sustained behavioural change a dynamic well-documented in health psychology literature. Instead, the interplay

between cognitive awareness and social reinforcement within school environments appears to shape learners' lifestyle choices, underscoring the need for holistic, behaviourally informed interventions.

Importantly, the absence of significant behavioural differences across grade levels suggests that external determinants such as the shared school infrastructure, local norms, and environmental constraints may exert a homogenizing influence on learners' actions. Furthermore, variations in attitude by grade and gender, but not by ethnicity or family history of hypertension, point to the layered nature of secondary school learners' health perceptions, where cultural, developmental, and social factors intersect.

These findings carry profound implications for both national health policy and global adolescent health discourse. As hypertension increasingly affects younger demographics worldwide, particularly in low- and middle-income countries, schools must be repositioned as frontline agents of health promotion. Integrating hypertension literacy into curricula, supported by tailored, age-appropriate interventions, offers a promising strategy to build cardiovascular resilience from an early age.

In conclusion, this study underscores the necessity of a multidimensional educational approach one that unites factual knowledge, attitudinal shifts, and behavioural reinforcement to combat the rising burden of adolescent hypertension. Future research should expand on this foundation by incorporating longitudinal and qualitative methods to uncover deeper psychosocial determinants of secondary school learner behaviour. Such insights are essential not only for improving health outcomes in South Africa but also for informing scalable, evidence-based strategies across similarly vulnerable populations worldwide.

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7. List of Annexures

ANNEXURE A: Ethical Clearance Certificate



University of Fort Hare
Together in Excellence

University of Fort Hare
HEALTH RESEARCH ETHICS COMMITTEE

East London Campus: Private Bag X9083, 4 Hill Street, CMRDC, East London, 5201, RSA
Tel: +27 (0) 43 704 7106 • **Email:** N.Meyers@vfh.ac.za

ETHICAL CLEARANCE CERTIFICATE

REC-100118-054

Certificate Reference Number: **Ref #2024=02=12 HRECLVN 002**

Project title: Knowledge, Attitude and Behaviour of Secondary School Learners towards Hypertension and its Risks in Burgersfort, Limpopo, South Africa.

Nature of Project: MSc (Nursing Science)

Principal Researcher: Mr. Benjamin Samson Aboje

Student Number: 202008148

Supervisor: Mrs. T Mtise

Co-supervisor: N/A

On behalf of the University of Fort Hare Health Research Ethics Committee (HREC), I hereby give ethical approval in respect of the undertakings contained in the above-mentioned project and research instruments(s). Should any other instruments be used, these require separate authorization. The Researcher may therefore commence with the research as from the date of this certificate, using the reference number indicated above.

Please note that the HREC must be informed immediately of

- Any material changes in the conditions or undertakings mentioned in the document.
- Any material breaches of ethical undertakings or events that impact upon the ethical conduct of the research.

The Principal Researcher must report to the HREC in the prescribed format, where applicable, annually, and at the end of the project, in respect of ethical compliance.

The HREC retains the right to

- Withdraw or amend this Ethical Clearance Certificate if:
 - Any unethical principles or practices are revealed or suspected.
 - relevant information has been withheld or misrepresented.
 - regulatory changes of whatsoever nature so require.
 - the conditions contained in the Certificate have not been adhered to
- Request access to any information or data at any time during the course or after completion of the project.

www.vfh.ac.za | 011 1916 | 011 1916 | 011 1916

ANNEXURE B: Letter of permission from Limpopo Department of Education

 LIMPOPO PROVINCIAL GOVERNMENT REPUBLIC OF SOUTH AFRICA DEPARTMENT OF EDUCATION CONFIDENTIAL Rt. 222 Eng. Maphahle Tel No 015 290 9443 Email: maphahle@ed.gov.za Aboje Benjamin Samson UNIVERSITY OF FORT HARRIS Private Bag 2003 4101 MANA, GABRIEL J and London 5301 ©202008148@ufh.ac.za RE: REQUEST FOR PERMISSION TO CONDUCT RESEARCH 1. The above bears reference. 2. The Department wishes to inform you that your request to conduct research has been approved. Topic of the research proposal: <u>"Knowledge, Attitude and Behaviour of Secondary School Learners towards Hyperemission and its Risks in Bursersfont, Limpopo, South Africa."</u> 3. The following conditions should be considered: 3.1 The research should not have any financial implications for Limpopo Department of Education. 3.2 Arrangements should be made with the District or Circuit Office and the School concerned. 3.3 The conduct of research should not in any way disrupt the academic programs at the schools. 3.4 The research should not be conducted during the time of Examinations especially the fourth term. 3.5 During the study, applicable research ethics should be adhered to; in particular the principle of voluntary participation (the people involved should be respected). REQUEST FOR PERMISSION TO CONDUCT RESEARCH - ABOJE BENJAMIN-SMITH Page 1 Cnr 113 Bickard & 24 Excelsior Street, POLOKWANE, 0700, Private Bag X 9489, Polokwane, 0700 Tel 015 290 7600/7702 Fax 015 218 0550 The heartland of Southern Africa-development is about people	3.6 Upon completion of research study, the researcher shall share the final product of the research with the Department. 4 Furthermore, you are expected to produce this letter at Schools/ Offices where you intend conducting your research as an evidence that you are permitted to conduct the research. 5 The department appreciates the contribution that you wish to make and wishes you success in your investigation. Best wishes.  Dr. Makola MC Director: IPR & R  Mashaba KM DDG: CORPORATE SERVICES 27/08/2024 Date 29/08/2024 Date REQUEST FOR PERMISSION TO CONDUCT RESEARCH - ABOJE BENJAMIN-SMITH Page 2 Cnr 113 Bickard & 24 Excelsior Street, POLOKWANE, 0700, Private Bag X 9489, Polokwane, 0700 Tel 015 290 7600/7702 Fax 015 218 0550 The heartland of Southern Africa-development is about people
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ANNEXURE C: Letter of permission from Sekhukhune East District Department of Education Burgersfort

Confidential Information - This is for official consumption



LIMPOPO
PROVINCIAL GOVERNMENT
REPUBLIC OF SOUTH AFRICA
DEPARTMENT OF
EDUCATION

SEKHUKHUNE EAST EDUCATION DISTRICT DISTRICT OF THE RISE

REF: 2/2/4 ENQ: MADITSI RD Tel: 013 231 0103 DATE: 15/032024

To: The Principal
Cc: Circuit Manager
FROM: MAKOLA MS- DISTRICT DIRECTOR
SEKHUKHUNE EAST DISTRICT

SUBJECT: PERMISSION TO CONDUCT RESEARCH IN SCHOOLS WITHIN THE
SEKHUKHUNE EAST DISTRICT

1. The above matter has reference.
Kindly be informed that Aboje BS studying Master of science in Nursing science at the university of Fort Hare is granted permission to conduct research at your school.
2. Condition attached to permission are:
 - Participation is voluntary.
 - Information collected will only be used for study purposes and remains confidential.
 - No names should be written on questionnaire.
 - Participants are free to withdraw anytime during the process.

NB: DATA COLLECTED AND ADMINISTRATION OF QUESTIONNAIRE MUST BE
DONE ONLY DURING BREAKS AND AFTER TEACHING HOURS

3. The District Director wishes you well as you continue to assist him.


MAKOLA MS
DISTRICT DIRECTOR

2024 03-15
DATE

Subject: Permission to conduct research in Schools within Sekhukhune east District
83 Aloe Street, 2314 Extension4, Aloe Ridge West, BURGERSFORT, 1150, P/Bag X 9041, BURGERSFORT, 1150

The heartbeat of Southern Africa-development is about people!

ANNEXURE D: Letters of permission from the three schools: Batau High School

NURSE ABOJE BENJAMIN SAMSON
No 5 Nnkgbane Quarters, behind Imra stores.
Mashifane Park
4th September 2024

THE PRINCIPAL
Batau High School
Gamashamothane
Burgersfort

Dear Principal,

I am a master's student in the Department of Nursing at the University of Fort Hare, with student number 202008148. I am writing to request permission to conduct research at Batau High School, specifically to collect data from Grade 8 to 12 learners. The research aims to investigate what learners know, think, and do regarding hypertension and its risks.

Learners will be invited to complete an online questionnaire, and I assure you that the research will be conducted in accordance with ethical guidelines and protocols. The data collected will be confidential, anonymous, and solely used for the purposes of this study.

I have attached the following documents for your review:

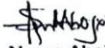
- Ethical clearance from the University of Fort Hare
- Permissions from the Provincial and District Department of Education
- A hard copy of the data questionnaire

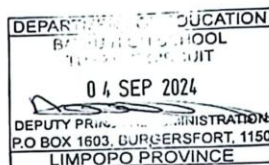
I respectfully request access to learners for data collection and assure you that the research will not disrupt the school's normal functioning or cause any inconvenience to learners, teachers, or staff. I am willing to work closely with your team to ensure a smooth data collection process.

Please indicate your approval by signing and returning a copy of this letter to me. If you have any questions or concerns, please do not hesitate to contact me at 0748614797.

Thank you for considering my request.

Sincerely,


Nurse Aboje BS
0748614797



Letter of permission from Mmditsi High School

NURSE ABOJE BENJAMIN SAMSON
No 5 Nnkgbane Quarters, behind Imra stores.
Mashifane Park
16th September 2024

THE PRINCIPAL
Mmditsi High School
Bothashoek,
Burgersfort.

Dear Principal,

I am a master's student in the Department of Nursing at the University of Fort Hare, with student number 202009149. I am writing to request permission to conduct research at Mmditsi High School, specifically to collect data from Grade 8 to 12 learners. The research aims to investigate what learners know, think, and do regarding hypertension and its risks.

Learners will be invited to complete an online questionnaire, and I assure you that the research will be conducted in accordance with ethical guidelines and protocols. The data collected will be confidential, anonymous, and solely used for the purposes of this study.

I have attached the following documents for your review:

- Ethical clearance from the University of Fort Hare
- Permissions from the Provincial and District Department of Education
- A hard copy of the data questionnaire

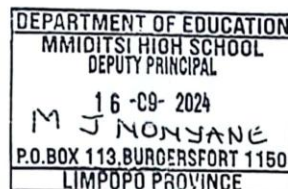
I respectfully request access to learners for data collection and assure you that the research will not disrupt the school's normal functioning or cause any inconvenience to learners, teachers, or staff. I am willing to work closely with your team to ensure a smooth data collection process.

Please indicate your approval by signing and returning a copy of this letter to me. If you have any questions or concerns, please do not hesitate to contact me at 0748614797.

Thank you for considering my request.

Sincerely,


Nurse Aboje BS
0748614797



Letter of permission from Mogale Wa Bogale Technical High School

NURSE ABOJE BENJAMIN SAMSON
No 5 Nnkgbane Quarters, behind Imra stores.
Mashifane Park
03 September 2024

THE PRINCIPAL
Mogale Wa Bogale Technical High School
Burgersfort

Dear Principal,

I am a master's student in the Department of Nursing at the University of Fort Hare, with student number 202008148. I am writing to request permission to conduct research at Mogale Wa Bogale Technical High School, specifically to collect data from Grade 8 to 12 learners. The research aims to investigate what learners know, think, and do regarding hypertension and its risks.

Learners will be invited to complete an online questionnaire, and I assure you that the research will be conducted in accordance with ethical guidelines and protocols. The data collected will be confidential, anonymous, and solely used for the purposes of this study.

I have attached the following documents for your review:

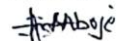
- Ethical clearance from the University of Fort Hare
- Permissions from the Provincial and District Department of Education
- A hard copy of the data questionnaire

I respectfully request access to learners for data collection and assure you that the research will not disrupt the school's normal functioning or cause any inconvenience to learners, teachers, or staff. I am willing to work closely with your team to ensure a smooth data collection process.

Please indicate your approval by signing and returning a copy of this letter to me. If you have any questions or concerns, please do not hesitate to contact me at 0748614797.

Thank you for considering my request.

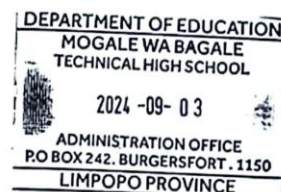
Sincerely,



Nurse Aboje BS
0748614797



03/09/2024



ANNEXURE E (QUESTIONNAIRE)

QUESTIONNAIRE



University of Fort Hare
Together in Excellence

TITLE OF THE RESEARCH PROJECT:

Knowledge, Attitude, and Behaviour of Secondary School Learners Towards Hypertension and Its Risks in Burgersfort, Limpopo, South Africa.

Dear Participant

My name is Aboje Benjamin Samson a Master student at the University of Fort Hare with student number 202003148. I am conducting a research study on: Knowledge, Attitude, and Behaviour of secondary school learners towards hypertension and its risks in Burgersfort, Limpopo, South Africa.

Purpose of the study

The objectives of the study are:

- To assess the knowledge of hypertension and its risk and its probable causes among secondary school learners in Burgersfort, Limpopo Province.
- To determine the attitude of secondary school learners regarding hypertension and its risks in Burgersfort, Limpopo Province.
- To establish the behaviour of secondary school learners toward hypertension and its risk in Burgersfort, Limpopo Province.
- To establish an association between the demographic characteristics and the knowledge, attitudes, and behaviour of secondary school learners towards hypertension and its risks.

As a research participant in my study, I kindly request that you complete a questionnaire sharing your thoughts, feelings, and behaviours related to hypertension and its risk factors.

Voluntary participation: Participants are free to opt in or out of your study without any coercion or pressure.

Informed consent: Participants are fully informed about the purpose, methods, risks, and benefits of the study and give their consent before taking part.

Anonymity: Participants' identities are not revealed or linked to their data in any way.

Confidentiality: Participants' data are stored securely and only accessed by authorized persons.

Potential for harm: This study does not expose participants to any physical, psychological, social, or legal harm or discomfort.

Results communication: This study's results are reported honestly and accurately, without falsification, fabrication, plagiarism, or misrepresentation.

The questionnaire should take about 15 to 30 minutes to time to complete. Your privacy and confidentiality of the data generated from the questionnaire will be ensured.

For any clarification, you can contact me on 0748614797 or email me on 202003148@ufh.ac.za.

Thank you,
Nurse Aboje Benjamin Samson

I have read and understood the instructions above, I therefore:

Yes, I consent

☐ Tick

THANK YOU

SECTION A : OBJECTIVE 2: KNOWLEDGE OF SECONDARY SCHOOL LEARNERS TOWARDS HYPERTENSION AND ITS RISKS

	Please indicate how much you agree or disagree with each of the statements by selecting one of the options	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
KNL1	High blood pressure is a serious condition	1	2	3	4	5
KNL2	Eating a diet high in salt increases the risk of hypertension	1	2	3	4	5
KNL3	I am aware of the common causes of hypertension	1	2	3	4	5
KNL4	I can identify the common causes of hypertension	1	2	3	4	5
KNL5	I understand the potential health consequences of untreated hypertension	1	2	3	4	5
KNL6	Hypertension can be caused by stress	1	2	3	4	5
KNL7	Only older people can get hypertension	1	2	3	4	5
KNL8	Non-lifestyle changes and non-medical methods can prevent or manage hypertension	1	2	3	4	5
KNL9	I can find reliable information about hypertension from trustworthy sources	1	2	3	4	5
KNL10	I believe I can avoid developing high blood pressure through healthy lifestyles	1	2	3	4	5
KNL11	I know that hypertension cannot be cured but can be controlled	1	2	3	4	5
KNL12	I think hypertension can affect a learner's ability to concentrate in class	1	2	3	4	5
KNL13	Smoking can increase the risk of hypertension	1	2	3	4	5
KNL14	Being overweight can increase the risk of hypertension	1	2	3	4	5

SECTION B: OBJECTIVE 3: ATTITUDE OF SECONDARY SCHOOL LEARNERS REGARDING HYPERTENSION AND ITS RISKS

	Please show how much you care if don't care about each of these statements by circling one of the options	Very concerned	Unconcerned	Neutral	Concerned	Very concerned
ATT1	How concerned are you about developing high blood pressure in the future?	1	2	3	4	5
ATT2	How much do you care about maintaining a healthy diet to prevent hypertension?	1	2	3	4	5
ATT3	How concerned are you about the effects of stress on your blood pressure?	1	2	3	4	5
ATT4	How much do you care about getting regular exercise to reduce the risk of hypertension?	1	2	3	4	5
ATT5	How concerned are you about the impact of smoking on blood pressure?	1	2	3	4	5
ATT6	How do you care about knowing more about hypertension and its risks?	1	2	3	4	5
ATT7	How concerned are you about the risk of developing high blood pressure?	1	2	3	4	5
ATT8	How much do you care about knowing your salt intake to prevent hypertension?	1	2	3	4	5
ATT9	Do you think stress can increase the risk of getting hypertension?	1	2	3	4	5
ATT10	How concerned are you about the effects of untreated high blood pressure?	1	2	3	4	5
ATT11	How much do you care about getting your blood pressure checked regularly?	1	2	3	4	5
ATT12	How much do you care about knowing your blood and family blood pressure prevention?	1	2	3	4	5
ATT13	Do you think you did care more about your risk of getting hypertension?	1	2	3	4	5
ATT14	How important is knowing your blood pressure for you?	1	2	3	4	5
ATT15	Do you think regular exercise can help you prevent hypertension?	1	2	3	4	5
ATT16	I think it is important to regularly checking blood pressure	1	2	3	4	5

SECTION C: OBJECTIVE 4: BEHAVIOUR OF SECONDARY SCHOOL
LEARNERS TOWARDS HYPERTENSION AND ITS RISKS

BEH	Please show how often you do these things by circling one of the choices.	Never	Rarely	Sometimes	Often	Always
-----	---	-------	--------	-----------	-------	--------

BEH 1	How often do you check your blood pressure?	1	2	3	4	5
BEH 2	How frequently do you engage in physical exercise for at least 30 minutes?	1	2	3	4	5
BEH 3	How often do you choose low-sodium food options?	1	2	3	4	5
BEH 4	How frequently do you eat fruits and vegetables?	1	2	3	4	5
BEH 5	How often do you avoid consuming sugary drinks?	1	2	3	4	5
BEH 6	How frequently do you maintain a healthy weight?	1	2	3	4	5
BEH 7	How often do you limit your alcohol consumption (if applicable)?	1	2	3	4	5
BEH 8	How frequently do you avoid smoking or using tobacco products?	1	2	3	4	5

BEH 9	How often do you engage in stress-reducing activities (e.g., meditation, deep breathing)?	1	2	3	4	5
BEH 10	How frequently do you get enough sleep (7-9 hours per night)?	1	2	3	4	5
BEH 11	How often do you educate yourself about hypertension and its risks?	1	2	3	4	5
BEH 12	How often do you avoid or limit processed and high-sugar foods?	1	2	3	4	5
BEH 13	How often do you limit your caffeine intake?	1	2	3	4	5
BEH 14	How often do you make healthy lifestyle choices to reduce your risks of hypertension?	1	2	3	4	5
BEH 15	How often do you drink enough water throughout the day?	1	2	3	4	5
BEH 16	How often do you read or learn about hypertension and its risks?	1	2	3	4	5

SECTION D:
DEMOGRAPHIC DETAILS OF RESPONDENTS

DOB1	How old are you?	Please write down your age in the space provided

DOB2	What is your current Grade?	Mark with an X
	8	
	9	
	10	
	11	
	12	

DOB3	What is your gender?	Mark with an X
	Male	
	Female	
	Prefer not to say	

DOB4	What is your ethnicity?	Mark with an X
	Black	
	Coloured	
	Asian	
	White	

DOB5	Have you ever been told that you have hypertension?	Please write down your age in the space provided
	Yes	
	No	

DOB6	Is anyone of your parents' hypertension?	Mark with an X
	Yes	
	No	

DOB7	What is the mode of your transport to school?	Mark with an X
	Walking?	
	Cycling?	
	Driving?	
	Family transport?	
	Public transport?	
	School transport?	

DOB8	How much time does the public transport take to get to school?	Specify the time

THANK YOU FOR TAKING THE TIME TO COMPLETE THIS QUESTIONNAIRE

ANNEXURE F: Turnitin Report

Aboje SB

ORIGINALITY REPORT

11 %

10%

9%

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SIMILARITY INDEX

INTERNET SOURCES

PUBLICATIONS

STUDENT PAPERS

PRIMARY SOURCES

1

rstudio-pubs-static.s3.amazonaws.com

Internet Source

2

vital.seals.ac.za:8080

Internet Source

3

docs.google.com

Internet Source

4

brieger.esalq.usp.br

Internet Source

5

geo200cn.github.io

Internet Source

6

Christian Ryan. "Data Science with R for Psychologists and Healthcare Professionals", CRC Press, 2021

Publication

7

hdl.handle.net

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8

bookdown.org

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repositories.lib.utexas.edu

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ANNEXURE G: Child Assent



University of Fort Hare
Together in Excellence

Health Research Ethics Committee

CHILD ASSENT

PARTICIPANT INFORMATION LEAFLET AND ASSENT FORM



TITLE OF THE RESEARCH PROJECT:

KNOWLEDGE, ATTITUDE AND BEHAVIOUR OF SECONDARY SCHOOL LEARNERS TOWARDS HYPERTENSION IN BURGERSFORT, LIMPOPO, SOUTH AFRICA.

RESEARCHERS NAME(S): MR ABOJE BENJAMIN SAMSON

ADDRESS: No 5 Nnkgabane Quarters
Behind Imra stores,
Bothashoek cross.
Burgersfort, Limpopo province
PO Box 2026
1150

CONTACT NUMBER: 0748614797

What is RESEARCH?

Research is a careful study that seeks to discover hidden facts and explanations of outcomes of interactions between people or things around us.

What is this research project all about?

Hypertension is a disease that affects both adults and children. This research study wants to know learners' knowledge of hypertension, attitudes, or ways of looking at things or

actions that cause hypertension. Examine the actions of learners that invite the onset of hypertension.

The duration of the research project?

Learners will answer questions on their knowledge of hypertension, attitude towards things that cause hypertension, and engagement with actions that trigger hypertension. Filling this question will take a learner about 30 minutes.

Why have I been invited to take part in this research project?

- *You have been invited to participate because you are qualified to participate.*
- *Your participation will help the researcher understand how to make recommendations to the Department of Basic Education to implement programs such as resuming school visits by the Department of Health.*

Confidentiality

To keep your identity confidential.

- *Do not write your names on the questionnaire to ensure anonymity and confidentiality.*
- *Only the researcher and supervisor have access to the filled questionnaires safely locked in cupboards in the researcher's office for five years. The information on this research study stored will also be kept in the computer is saved in a software format protected with a password for five years.*
- *The filled questionnaires will be destroyed after five years, and the information in the computer will be permanently deleted from the computer's hard drive using a relevant software program after five years.*

If a sponsor is to be involved

There is no sponsor, which means no pressure on the outcomes of the findings.

Who is doing the research?

I am Nurse Aboje Benjamin Samson, a master's in nursing student at the University of Fort Hare, East London campus; I am dedicated to creating more awareness among secondary school learners on hypertension. I want secondary school learners to have a basic knowledge of hypertension and avoid the causes of hypertension.

What will happen to me in this study?

You will be expected to honestly answer all the questions on the questionnaire form.

Can anything bad happen to me?

There are no known risks involved in your taking part in this research.

Who else is involved in the study?

Three hundred fifty learners from two government and two independent schools will participate in this study.

Can anything good happen to me?

- *Participating in this research study will allow you to express your knowledge, attitudes, and behaviours towards hypertension.*
- *The information I get from you and other participants will form the basis of the recommendations to the Department of Basic Education to implement measures to help prevent learners' hypertension.*

Will anyone know I am in the study?

Your participation in this study is voluntary; I will keep participants' information confidential.



Who can I talk to about the study?

These numbers can be contacted for additional information during office hours.

Researcher: Mr Aboje B Samson: 0748614797

Supervisor: Mrs Mtise Tobeka: 082 4872642

What if I do not want to do this?

Participating in this study is voluntary, and you are under no obligation to participation. You are free to withdraw at any time and without giving Furthermore, you are assured of complete anonymity, privacy, and confidential information you provide for the study.

Do you understand this research study and are you willing to take part in it?

YES

NO

Has the researcher answered all your questions?

YES

NO

Do you understand that you can pull out of the study at any time?

YES

NO

Signature of Child

Date

ANNEXURE H: Informed Consent



University of Fort Hare
Together in Excellence

UFH FHREC Stamp

PARTICIPANT INFORMATION LEAFLET AND CONSENT FORM

TITLE OF THE RESEARCH PROJECT: Knowledge, Attitude and Behaviour of Secondary School Learners towards Hypertension and its risks In Burgersfort, Limpopo, South Africa.

PRINCIPAL INVESTIGATOR: Aboje Benjamin Samson (202008148).

Address: No 5 Nnkgabane Quarters
Behind Imra stores,
Bothashoek cross.
Burgersfort, Limpopo province
PO Box 2026
1150

Contact Details: Cell: 0748614797
Email: 202008148@ufh.ac.za

I, Nurse Aboje Benjamin Samson, a master student at the University of Fort Hare, East London campus, invite you to participate in my research project. I am researching the Knowledge, Attitude, and Behaviour of secondary school learners towards hypertension in Burgersfort, Limpopo, South Africa. Your participation in this study is entirely voluntary, and you can withdraw from the study at any stage without any consequence. Please read through the information that provides the details of this study. You can, after that, ask for more clarification on your involvement in the study.

This study is conducted under the approval, guidance, and supervision of the University of Fort Hare Faculty of Health Sciences Research Ethics Committee (UFH FHREC) (Ref No:100118-05) and in line with the stipulations of ethical guidelines and

principles of the international Declaration of Helsinki and the ethical guidelines of the National Health Research Ethics Council.

What is this research study all about?

- It will involve investigating knowledge, attitude, and behaviour of secondary school learners towards hypertension and its risks in Burgersfort, Limpopo, South Africa.

The objectives of this research are:

- To establish an association between the demographic characteristics and the knowledge, attitudes, and behaviour of secondary school learners towards hypertension and its risks.
- To assess hypertension knowledge and its risks among secondary school learners at Burgersfort in Limpopo Province.
- To determine the attitude of secondary school learners regarding hypertension and its risks at Burgersfort in Limpopo Province.
- To establish the behaviour of secondary school learners towards hypertension and its risks at Burgersfort in Limpopo Province.

Why have you been invited to participate?

- You have been invited to participate because you are suitable to participate in the study in terms of participating standards.
- You have also complied with the following participating standards:
You are between 10 to 19 years old and volunteered to participate during this data collection at this school.
- You will be excluded if:
If you are willing to participate but have not submitted a filled consent form.

What will your responsibilities be?

- You will be expected to honestly answer all the questions on the questionnaire form.

Will you benefit from taking part in this research?

- The direct benefits for you as a participating learner will be the chance to express your knowledge, attitudes, and behaviours towards hypertension.
- The indirect benefit will be the implemented changes by the Department of Basic Education on preventing learners' hypertension suggested by the recommendations of this study.

Are there risks involved in your taking part in this research?

- There are no known risks involved in your taking part in this research.

What will happen in the unlikely event of some form of discomfort occurring as a direct result of your taking part in this research study?

Should you have questions that you need further clarification on, during or after completion of the questionnaire, you can contact me on 0748614797 to express

- your concerns. Should you at any point wish to discontinue the questionnaire, you may do so.

Who will have access to the data?

The report of this study will be anonymous by not attaching its findings to names of participating learners and schools where data were collected. The researcher, supervisor, and co-supervisor have access to the data which is safely locked in cupboards in the researcher's office for five years. The harvested soft copy is saved in a software format protected with a password for five years.

What will happen with the data?

The filled questionnaires will be destroyed after 5 years, and the harvested soft copies will be permanently deleted from the computer's hard drive using a relevant software program after 5 years.

Will I be paid to take part in this study and are there any costs involved?

No, you will not be paid and there is no cost involved in participating in this study.

Who can you contact for additional information regarding the study?

These numbers can be contacted for additional information during office hours.

Researcher: Mr Aboje B Samson: 0748614797

Supervisor: Mrs Mtise Tobeka: 082 4872642

How will you know about the findings?

- The findings of this research study will be presented to the participants, the respective schools, Fetakgomo Tubatse school district office and Polokwane Provincial Department of Basic Education.
- The study will also be published in accredited journals, and it will take its primary reference abode at the library of the University of Fort Hare.

Declaration by participant

By signing below, I agree to take part in a research study titled: knowledge, attitude, and behaviour of secondary school learners towards hypertension and its risks in Burgersfort, Limpopo, south Africa.

I declare that:

- I have read and understood this information and the content of the consent form.

- I have had a chance to ask the researcher questions which were adequately answered.
- I understand that taking part in this study is **voluntary** without any form of subtle pressure.
- I may decide to leave at any point without any veiled consequence.

Signed at (*place*) on (*date*) 20.....

Declaration by researcher

I *Aboje Benjamin Samson* declare that:

- I explained the information in this document to the participating learner.
- I encouraged the learner to ask questions and took adequate time to answer the questions.
- I am satisfied that the learner adequately understands all aspects of the research, as discussed above.

Signed at (*place*) on (*date*) 20.....

ANNEXURE I: Statistician Report

41 Sanford Glen
53 2nd avenue
Ravenswood
Boksburg
1459

06 January 2025

To Whom It May Concern,

Subject: Letter of Statistical Analysis Support

I am writing to confirm that I have provided statistical analysis services for the dissertation project titled “*Knowledge, Attitude and Behaviour of Secondary School Learners Towards Hypertension Risk in Burgersfort, Limpopo, South Africa,*” conducted by Samson Benjamin Aboje as part of the requirements for their degree in MSc in Nursing Degree at the University of Fort Hare.

The scope of my involvement included consultation, analysis, and interpretation of the data

provided by Samson Benjamin Aboje. Below is the outline for the statistical procedures performed and the methodology applied to analyse the survey data:

1. Data Preparation and Cleaning

- The raw dataset was thoroughly examined for completeness and accuracy.
- Missing data were identified, and cases with missing data were excluded from analysis.

2. Descriptive Statistics

- Summary statistics, that is the mean/median and standard deviation/range were computed for the quantitative variables.
- Frequency tables and bar graphs were created to understand the data distribution.

3. Inferential Statistical Analysis

- Hypothesis testing was performed using the t-tests, chi-square tests, ANOVA, depending on the research questions, to address the research objectives.
- Assumptions for these tests were verified, including normality, homoscedasticity and independence and any violations were addressed through non-parametric tests.

4. Software Utilized

- The analyses were performed using R Statistical Software.

5. Results Interpretation

- I provided guidance on the interpretation of statistical results in alignment with the research objectives, ensuring clarity in reporting significance levels, effect sizes, and confidence intervals.

I confirm that the statistical methods applied were appropriate for the research design and aligned with standard practices in the field. All analyses were conducted with the utmost attention to accuracy and reliability.

Should you require further information or clarification regarding the statistical analysis performed, please do not hesitate to contact me at drdmoyo.biostats@gmail.com or +27 76 511 5739.

A handwritten signature in black ink, appearing to read 'D. Moyo', with a stylized flourish at the end.

Yours faithfully,
Dr Davison Moyo
Ph.D., MSc, Biostatistician

ANNEXURE J: Editor Report



NATIONAL OPEN UNIVERSITY OF NIGERIA

Otan-Ayegbaju Community Study Center

No. 4 Ikotun Street, Otan Ayegbaju, Boluwaduro Local Government Area, Osun State, Nigeria.

Phone: 08038647427

Web: www.noun.edu.ng

Email: otan-ayegbajumsc@noun.edu.ng

I, Orimaye Jacob Oluwafemi (Reader), hereby confirm that I performed the language editing of the dissertation detailed below. This dissertation is intended for submission in partial fulfilment of the requirements for the Master's degree in Nursing within the Faculty of Health Sciences, University of Fort Hare.

The dissertation has been thoroughly edited in English, focusing on grammar, syntax, punctuation, and spelling. Additionally, it has been formatted and proofread to ensure clarity and coherence.

Title: *Knowledge, Attitude, and Behaviour of Secondary School Learners Towards Hypertension and Its Risks in Burgersfort, Limpopo, South Africa.*

Disclaimer: The author retains the right to accept or reject my suggested edits and corrections. However, I cannot be held responsible for any changes made to the document after my final editing and proofreading, completed on 11/01/2025.


Signature



Main Campus: National Open University of Nigeria University Village Plot 91, Cadastral Zone Nnamdi Azikiwe Expressway Jabi, Abuja Nigeria.