MINI-DISSERTATION

KNOWLEDGE AND PRACTICES OF NURSES ON USE OF NUTRITION COMPONENT OF THE ROAD TO HEALTH BOOKLET IN GIYANI PRIMARY HEALTH CARE FACILITIES, MOPANI DISTRICT

By

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MINI-DISSERTATION
Submitted in partial fulfillment of the requirements for the degree of

Master of Public Health

In the

Department of Public Health
(School of Health Sciences)

at the

UNIVERSITY OF LIMPOPO

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2025

DECLARATION

I declare that the "**Knowledge and Practices of Nurses on Use of Nutrition Component of the Road to Health Booklet in Giyani Primary Health Care Facilities, Mopani District"** is my own work and that all the sources that I have used or quoted have been indicated and acknowledged by means of complete references and that this work has not been submitted before for any other degree at any other institution.

Mashigo Ressie (Ms) 07/02/2025

Full names **Date**

Signature

ACKNOWLEDGEMENTS

I wish to thank the following persons for their respective contributions to this mini-dissertation:

My supervisor, Mr M.S. Makwela, for his guidance, insight, encouragement, and patience from the beginning of this project until now.

My Co-Supervisor. Dr T.J. Mashamba, for the guidance and encouragement.

My special thanks and appreciation go to Ms Mashego Lulama for her support and encouragement during this project.

All nurses in Giyani local area for their willingness to participate in this study.

Local Managers and Operational managers throughout the Giyani local area for facilitating recruitment.

Department of Health: Mopani District for permission to collect data at their clinics.

The Limpopo Province: Department of Health, for facilitating the registration of my proposal at the National Health Research Database (NHRD) and permitting me to conduct the study.

DEDICATION

I would like to thank God for the spirit of perseverance through the entire research process. To my husband, Hlongwane Joseph Risimati, to my children: Hlongwane Nsovo and Hlongwane Xiluvelo - this dissertation is sincerely dedicated to your love, support, encouragement, and enequalled perseverance. It is also dedicated to everyone who helped make this research process a success.

ABSTRACT

KNOWLEDGE AND PRACTICES OF NURSES ON THE USE OF NUTRITION COMPONENT OF THE ROAD TO HEALTH BOOKLET IN GIYANI PRIMARY HEALTH CARE FACILITIES, MOPANI DISTRICT.

Background: The Road to Health Booklet (RtHB) is critical for children's health, development, and growth, because children aged 5 and younger are vulnerable to malnutrition and infectious diseases. RtHB provides health records for prevention, risk identification, curative health interaction activities, health promotion information, parenting empowerment opportunities, and a communication tool for health services. Lack of awareness, understanding of the content and completion criteria, as well as poor or partial use, are among the challenges that nursing personnel face when using child health records or RtHB (WHO, 2018).

Objectives: The aim of this study is to assess the knowledge and practices of nursing staff regarding the use of nutrition components of RtHB in Greater Giyani Primary Health Care (PHC) facilities and, secondly, to determine the associations between knowledge, practices and sociodemographic variables.

Methods: In this study a quantitative approach and a cross-sectional descriptive design was employed. The convenience sampling method was used to select clinics and consecutive nonprobability sampling was used to select participants. Descriptive statistics such as frequencies, cross-tabulation, and correlation tests were performed to analyse the data. Results were presented in tables and cross-tabulation. Data were tested for normality, and the Chi-square test was performed for correlation.

Results: One hundred and seven participants participated in the study. The mean age of the participants was 43.9± 9.387. Most of the participating nurses were female. The majority were professional nurses (57.9%), followed by registered nurses (24.3%) and the least number were staff nurses (17.8%). Most nurses (60.1%) had 7-10 years of work experience, 31.2% had 1-6 years of work experience and 7.5% had more than 10 years of work experience.

Most of the nurses (74.7%) received their training on RtHB in the Department of Health workshops, followed by the nursing school (18.7%), the reminder were trained in university while studying (6.5%). The aspects covered during training included a

combination of plotting points for growth indicators, interpreting them, procedures for taking anthropometric measurements. The majority of nurses also received training on immunization.

Almost 40% of the nurses had a moderate level of knowledge, 35.5% had a low level of knowledge, and only 25.2% of them had a high level of knowledge regarding the use of the nutrition component of RtHB. The results show that the majority of nurses had a good score (77.6%) on practice, followed by a poor score (12.1%) and a best score of 10.3% in the use of the nutritional component of the RtHB.

There was no statistically significant association between knowledge and age ($p = 0.253$) and gender ($p = 0.091$. There was no statistically significant association between practices and age ($p = 0.335$), gender ($p = 0.308$), and category of nursing personnel ($p = 0.252$). There was a significant association between total knowledge and total nurses' practices of nurses on the use of the nutrition component of RtHB ($p = 0.002$).

Conclusions: The findings of the current study revealed a moderate level of knowledge and fair practices among participants on the use of the nutritional component of RtHB. However, their ability to accurately use the nutrition component was average. The study also suggests that nurses with a better understanding of the nutritional component were more likely to put their knowledge into practice than those with less knowledge.

Keywords: knowledge, nurses, nutrition component, practices, Road to Health Booklet.

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ABBREVIATIONS

CHBR – Child health record booklet

DOH – Department of Health

GMP – Growth Monitoring and Promotion

HCW – Health Care Worker

IMCI –Integrated Management of Childhood Illnesses

MUAC– Mid-Upper Arm Circumference

MIYCN – Maternal Nutrition Infant and Young Child Nutrition

NDOH – National Department of Health

PHC – Primary health care

RtHB –Road to Health Booklet

SANC – South African Nursing Council

SADHS – South African Demographic and Health Survey

SDG – Sustainable Development Goals

UNICEF – United Nations Children's Funds

WHO – World Health Organization

DEFINITION OF CONCEPTS

Road to health booklet

The Road to Health Booklet is a record of a child's growth and development that is given to mothers when their children are born and is used by medical professionals to ensure that each child receives the treatment needed at the right time (DoH, 2018). In this study, the researcher will focus on the nutrition component that covers growth charts, mid-upper arm circumference (MUAC), infant and young child feeding messages, Vitamin A, and deworming.

Knowledge

According to the Oxford Advanced Learners Dictionary (2022), knowledge is information, comprehension, and abilities that people acquire through education or experience. In this study, knowledge refers to skills acquired by nursing staff through training and experience in the use of the nutritional component of RtHB.

Practices

Practices refers to activities or training in which people participate on a regular basis in order to enhance their skills (Oxford Advanced Learners Dictionary, 2022). In this study, practices can include regular taking of anthropometric measurements, plotting, interpreting the graphs in the RtHB and counselling mothers or caregivers based on the classification in the RtHB.

Nursing staff

Nursing staff are described as individuals who help in the recognition, prevention, or treatment of disease or disability, who are certified government to provide care to patients, and are trained in scientific nursing, meet specific standards training and clinical skills necessary. (American Nurses Association, 2018). In this study, nursing staff refer to all categories of nurses who work in primary health care (PHC) facilities or clinics in Mopani District, Giyani.

Professional Nurses

Professional nurses are health care professionals/workers (HCW) who provide care to patients in a variety of situations. They are educated and trained to assess,

diagnose, and treat physical and mental health disorders, in addition to providing information and support to patients and their families. (American Nurses Association, 2018). In this study, professional nurses include all nurses who diagnose, treat, and counsel mothers or caregivers of children under five years of age using the RtHB or the integrated management of childhood illnesses booklet in PHC facilities or clinics in Mopani District, Giyani.

Staff Nurse

A staff nurse is a registered nurse working in a health care facility who provides direct patient care, including medication administration, monitoring vital signs, performing basic medical operations, and helping patients recover (SANC, 2005). In this study, the term staff nurse will refer to all nurses working in PHC facilities or clinics in Mopani District, Giyani, whose responsibility in the RtHB is to monitor anthropometric measurements of children, immunise children under the age of five years, and administer doses of vitamin A and deworming, and refer children to other specialised personnel.

Auxiliary Nurse

An auxiliary nurse is a health care professional who helps nurses take care of patients by feeding patients, administering medication and monitoring patient vital signs (SANC, 2005). In this study, the term auxiliary nurse will refer to all nurses working in PHC facilities or clinics in Mopani District, Giyani, who monitor child anthropometric measurements, educate mothers on infant and young child feeding and referred the child to other nurses for further management.

Primary health Care facility

The primary health care (PHC) facility is a facility that operates 24 hours a day. It is defined as a type of care and setting for the delivery of health services that promote first-contact, accessible, ongoing, comprehensive and coordinated care to individuals and communities (WHO, 2021). In this study, the term PHC facility refers to clinics and community health centers that provide comprehensive health services in Mopani District in the greater Giyani Subdistrict.

Component

A component is defined as one of the multiple elements that combine to form a system, machine, or substance. (Oxford Advanced Learners Dictionary, 2022). In this study, the term component may include the part of the RtHB that deals with the nutrition of infants and young children.

CHAPTER ONE: INTRODUCTION AND BACKGROUND

1.1 INTRODUCTION

Child health records booklets (CHRB) are used in morethan 163 countries (World Health Organisation, 2018). The Road to Health Booklet (RtHB) is a health passport for children and a nutrition guide for parents and carers on age-appropriate feeding and early childhood nutrition (Kwinika, 2022). This method relies on primary healthcare providers, notably nurses, to educate families about health.

The new RtHB (Department of Health, 2018) contains head circumference, height-for-age, MUAC, and health promotion messaging to address growth monitoring inconsistencies, notably in HIV treatment. This 46-page RtHB helps parents raise healthy children and healthcare practitioners identify underdeveloped children and make referrals (Department of Health, 2018).

Aligned with the UN Sustainable Development Goals (SDGs), the RtHB targets nutrition, love, protection, health care, and supplementary care (Manderson & Ross, 2020). HCWs can monitor and promote growth using MUAC indicators and gender-specific growth charts (Manderson & Ross, 2020). The booklet's nutrition focus is crucial because under-5s are susceptible to malnutrition and infectious diseases (Win, 2016). Health outcomes can be improved using RtHB.

Many research have found CHRB and RtHB use difficult. Abdulrahman, Habeeb, and Teeli (2020) found that growth charts were underused and vaccination was the most recorded health activity in Iraq's Duhok Province. Naidoo et al. (2018) found less than 5% of weight-for-age and head circumference charts filled. Poor training, resources, and understanding of completion requirements limited use (WHO, 2018; Wijedasa, 2020).

South African research shows HCWs face similar RtHB use issues. Win and Mlambo (2020) struggled with time, language, and resources. Blaauw et al. (2017) found that Western Cape PHC facilities had trouble adopting RtHB due to staff shortages, training, and time restrictions. Nkosi et al. (2021) found that nurses knew the RtHB's nutritional requirements, but they often deviated from them, leading in inconsistent dietary advice throughout consultations. These inconsistencies harm nursing education and patient care.

Poor growth tracking has major consequences, according to Debuo et al. (2017). Misclassifying growth metrics and charting delays diagnoses, reduces referrals, and increases malnutrition risk. Malnutrition, the largest cause of childhood morbidity and mortality globally, impacts children's physical and cognitive development, making them more susceptible to illnesses and perpetuating poverty and sickness (Global Nutrition Report, 2022; FAO, IFAD, UNICEF, WFP & WHO). 6% of South African under-5s are underweight, 3% are wasting, and 27% are stunted (SADHS, 2016). The Mopani District Health Information System (2022) reported 5.3% moderate acute malnutrition and 2.9% underweight children.

A study conducted by Moolla, Coetzee, Mongwenyana, Robertson, Marincowitz, Zuckerman, Günther, Hamer, Yousafzai, Rockers and Evans (2024) stresses that while nurses play a fundamental role in promoting children's growth through nutrition education, their understanding of the RtHB nutritional guidelines is irregular and often insufficient. In various development contexts, including South Africa, research indicates that many nurses do not have complete knowledge of the specific dietary recommendations outlined in the RtHB. This deficiency can lead to a non-optimal application of these guidelines during patient consultations, thus preventing effective nutritional interventions.

Despite its growth monitoring and promotion potential, RtHB utilisation gaps continue (WHO, 2017). De Lange, Van der Heijden, Van Vuuren, Furunes, De Lange, & Dikkers (2021) say insufficient training, nutritional resources, and staff lead to inconsistent nursing practices. Due to these limits, nurses struggle to enforce RtHB dietary recommendations and educate caregivers on child nutrition. These factors must be addressed to improve PHC. The RtHB acts as a crucial tool to educate caregivers on optimal nutrition for babies and small children, underlining the importance of monitoring growth, promoting breastfeeding and introducing adequate complementary foods (Matombo, 2022). However, the effective application of these guidelines depends on nurses' understanding of the nutritional principles and their ability to transfer this knowledge in practice.

Despite the fundamental role that nutrition plays in health promotion and disease prevention, evidence indicates a significant gap in nutritional training between nursing programs in South Africa (Mancin, Sguanci, Cattani, Soekeland, Axiak, Mazzoleni,

De Marinis, M.G. and Piredda 2023; Ukoha & Mtshali, 2023). The integration of nutritional education in nursing curricula not only enhances nurses' skills in food assessment and intervention, but also equip them with the skills needed to educate patients on healthy eating habits. This is particularly vital in a country surrounded by high rates of obesity, diabetes and hypertension, where bad nutritional choices contribute significantly to the burden of these conditions (Mancin et al., 2023). The incorporation of integral nutrition education equips nursing professionals with the necessary skills to address these pressing health problems effectively (Cardenas, Correia, Hardy, Gramlich, Cederholm, Van Ginkel-Res, Remijnse, Barrocas, Gautier, Ljungqvist. and Ungpinitpong, 2023).

Many studies have evaluated South African provinces' RtHB acceptance and use, but few have examined Giyani subdistrict PHC nurses' nutritional understanding and practices. Implementing the RtHB's nutritional guidelines promotes child health, so this knowledge gap is critical. Thus, this study assesses nursing staff knowledge and practices on the use of the nutritional component of the RtHB in Greater Giyani PHC institutions to inform targeted interventions and training programs.

1.2 PROBLEM STATEMENT

The RtHB improves the development and well-being of children under five by providing healthcare. Nurses who struggle to capture and interpret RtHB data may miss early indicators of childhood malnutrition. Nurses must know the RtHB, especially the nutritional part, to measure and prevent malnutrition. Research reveals that RtHB data is often absent, misconstrued, or underutilised. Despite the RtHB's goal, nurses often miss opportunities to educate parents or carers on nutrition during Growth Monitoring and Promotion (GMP) visits to well-baby clinics.

Nursing staff misread RtHB growth charts, making it hard to diagnose nutritionally deficient youngsters. Systemic challenges like lack of training, support, supervision, and RtHB competence often cause these. Some nurses find RtHB completion time-consuming and cumbersome, reducing its use. This assumption limits the RtHB's ability to identify and promptly feed malnourished youngsters.

Dietary guidance inconsistencies and nursing staff knowledge and practice gaps can hinder the RtHB's mother and child health efforts. Poor use of RtHB nutrition can hinder growth monitoring and malnutrition prevention, harming children (Jones,

Macaninch, Mellor, Spiro, Butler, Johnson, & Moore, 2022). To close these gaps, identify children who require nutritional support, and minimise malnutrition in children under five, nursing staff's RtHB nutrition component knowledge and practices in PHC settings must be examined.

1.3 PURPOSE OF THE STUDY

1.3.1 Research purpose

The purpose of the study is to describe the knowledge and practices of nursing personnel on the use of the nutrition component of RtHB in primary health care facilities of Greater Giyani.

1.3.2 Objectives

The objectives of the study are the following:

Assess the knowledge of nursing staff about the use of the nutrition component of the RtHB in Greater Giyani primary healt hcare facilities.

Assess nursing staff practices on how to use of the nutrition component of RtHB in primary healthcare Facilities in Greater Giyani.

Determine associations between knowledge, practices, and sociodemographic variables.

1.4 RESEARCH QUESTION

What is the level of knowledge and the practice of nursing personnel on the use of the nutrition component of RtHB in primary healthcare facilities in Greater Giyani?

1.5 RESEARCH METHODOLOGY

This section provide a brief discussion of the methodology followed by the researcher to achieve the objectives of this study and to answer the research question. Additional details are provided in Chapter 3.

1.5.1 Research Approach and Design

The study applied a quantitative approach, i.e., a method that examines the extent of one or more relevant variables (Leedy & Ormrod, 2016). This research approach requires measurements and the assumption that the phenomenon being studied is measurable, as well as large sample sizes and a focus on the number of responses (Wilson, 2019). The researcher used a quantitative approach in this study because it

includes data collection using a structured questionnaire, that quantifies the percentage of nurses who use the RtHB nutrition component in thePHC in the local area of Giyani.

A cross-sectional design was applied for this study. This design studies a situation as it arises and does not involve changing or modifying it or determining a cause-and-effect relationship (Setia, 2016). A cross-sectional design collects data from various participants on a single event rather than at numerous time points with the same participants. In this study, participants were interviewed once and were not contacted again unless necessary.

1.5.2 Sampling and sample size

Sampling is the method of choosing participants from a larger population as a basis to assess the prevalence of information of interest to the researcher (Kumar, 2019). The convenience sampling method was used to select PHC clinics in the Greater Giyani area. Convenience sampling involves the selection of readily available participants or objects (Brink, van der Walt & van Rensburg, 2018). In this study, the Giyani local area clinics were chosen due to accessibility and lack of funds for researchers. Owing to the small sample size for nursing personnel, consecutive non-probability sampling was applied. According to Palmer (2019), consecutive sampling is a procedure that involves selecting each subject who fits the inclusion criteria until the needed sample size is obtained. The total sample size was 100 nursing personnel, however, some could not participate due to sickness, leave, workshops, and resignation or change of working environment.

1.5.3 Data collection

Data collection is an important part of the research process because it lays the foundation for understanding and analysing the phenomena under examination. (Petchko, 2023). Data was collected for this study using adopted questionnaire that could be completed by the researcher.

1.5.4 Data analysis

The researcher applied descriptive statistics with the help of statisticians from the University of Limpopo. The analysed data was presented in table, figure, and narrative format. The results were presented in tables, cross-tabulation and box plots.

Furthermore, the descriptive statistics included reference to the standard mean and standard deviation.

1.5.5 Reliability and validity

Reliability refers to the potential of a research tool to yield similar results when used repeatedly under similar conditions (Kumar, 2019). The research tool used during this study was created by evaluating the available literature on previous research conducted on this study's subject, both internationally and nationally. The data collection tool was translated into Xitsonga because it is the native language of many of the participants. In addition to ensuring reliability, the researcher pre-tested the instrument and administered the questionnaire in one of the PHC facilities in Mopani.

Validity

Validity is defined as the potential of a tool to measure the variable it is designed to measure (Polit & Beck, 2017). The validity of the instrument was ensured by piloting it with the selected population in one of the facilities with homogeneous characteristics. These results were not included in the data analysis. The validities that are likely to affect the study were face and content and were addressed as follows.

According to Shantkumar (2018), face validity describes how well a test or instrument assesses what it is supposed to measure. In this study, the questionnaire was submitted to nutrition professionals in the field of nutrition (dietitians and nutritionists) to proofread and validate of the flow of questions. The readability and legibility of the questions will be rectified based on expert comments.

The validity of the content of an instrument describes whether it is systematically and comprehensively representative of the characteristic being measured (Meron & John, 2019). In this study, validity content was improved by covering all aspects of content including ; nurses's knowledge and practiceson the use of the nutrition component of RtHB. Additionally, the researcher administered questionnaire to all participants to ensure consistency and completeness of the questions.

1.5.6 Bias

Bias is defined as an effect that causes an inaccuracy or prejudice in the quality of evidence (Brink et al., 2018). The researcher took the necessary actions to ensure that the findings were free of researcher bias. Consecutive nonprobability sampling

was used to include all the nurses in the PHC Facilities but, due to unforeseen circumstances, the researcher did not attain the desired sample size. According to Wilson (2019), selection bias occurs when the study population does not precisely reflect the target group and conclusions cannot be reached about the number of risks or benefits for that population. In this study, all nursing categories described were included in the study to minimise selection bias.

1.6 ETHICAL CONSIDERATION

Research approval and permission to conduct the study were obtained from the School of Health Care Sciences and Turfloop Research Ethical Committee (TREC), then from the Department of Health District Office and thereafter, from the Operations Managers of the clinics where the research was conducted. All participants were required to give their consent to participate in a study by signing consent forms. The researcher explained in detail the purpose of the study, their rights, potential risks and benefits to the participants before they were asked to sign the consent form. Participants were informed that they could withdraw from the study at anytime should they nolong wish to participate.

There was no harm to the participants of this study; however, its significance was explained to the nurses, and the facility managers. Confidentiality and privacy were ensured by storing all the collected data in a locked office and on software that has password encryption. Respondents were assured that only the supervisor, statistician, and researcher would have access to the data. Anonymity refers to the principle that the identity of the research participant is kept a secret (Brink et al., 2018). The identities of participants were protected by not writing their names on the questionnaire. Participants were also assured that the information shared was solely for study purposes but not for public knowledge.

1.7 SIGNIFICANCE OF THE STUDY

The findings of the study may shed light on the effective use of the nutrition component of RtHB by nurses. Information may also help programme managers develop training and refresher courses on the use of the RtHB nutrition component. In addition, the inclusion of nutritional training in the nursing program aligns with the global objectives of the national development plan of South Africa, which recommends a health system which not only meets acute medical needs but promotes also preventive care

strategies. Recommendations can benefit mothers and children through improved health care services from nurses and also reduce the burden of malnutrition among young children in the district.

1.8 OUTLINE OF THE STUDY

Chapter One: Introduction and background

Chapter One presents the background of the study and why the study is necessary. It provides an overview and shows how the rest of the study is structured and which methods and techniques are applied to achieve the aims and objectives of this study.

Chapter Two: Literature review

This chapter's literature review will provide an overview of the existing information concerning the phenomenon investigated and how the relevant concepts correlate. This chapter give details on the status quo in the reviewed literature regarding the use of RtHB, knowledge and practices on the use of RtHB by nursing personnel.

Chapter Three: Methodology

This chapter outlines the methods and techniques followed to achieve the objectives of this study. The researcher explains why each specified method or technique was chosen. The steps followed to collect and analyse data, as well as the precautionary measures taken to protect participants, are provided in detail.

Chapter Four: Results

The results of the study are reported and interpreted in this chapter. Chapter 4 is organised into three sections: Sociodemographic information, knowledge of nursing staff about the use of the nutrition component of RtHB and practices of nursing staff about the use of RtHB.

Chapter Five: Discussion

The study findings are discussed in this chapter.

Chapter Six: Conclusions, recommendations, and limitations

This chapter discusses the conclusion of the study based on the findings collected in Greater Giyani PHC facilities on the knowledge and practices of nursing staff regarding

the use of RtHB. Limitations that have affected the study and the recommendations will also be discussed.

CHAPTER TWO: LITERATURE REVIEW

2.1 INTRODUCTION

The literature on nurses' RtHB knowledge and practices is useful for this investigation. Several research have examined nurses' RtHB awareness, understanding, and use in diverse healthcare contexts. These studies indicate insufficient training, poor growth chart completion understanding, and uneven RtHB execution, particularly dietary component. However, many of these research focus on descriptive findings and rarely challenge structural or contextual impediments to RtHB use.

Understanding existing literature helps identify knowledge and practice gaps and assess how they relate to nursing staff training and preparedness. This chapter critically reviews global, African, and South African views on the RtHB as a child health monitoring tool and its implementation challenges. The review examines the challenges and implications of these gaps for malnutrition prevention and child health, tying these findings to the study aims. Contextualised interventions and policy proposals are intended for Greater Giyani PHC facilities.

2.2 GLOBAL PERSPECTIVE ON THE USE OF THE RtHB

Child health records have been used in different countries to monitor child health and development. Health facilities employ RtHB to track children's growth, development, and immunization (Abdurrahman, Habeeb, & Teeli, 2020). According to Abdurrahman et al (2020), primary health care centres in Iraq's Duhok Province reported that 100% of the child health brochures contained documented vaccination records, followed by an anthropometric measurements review at 22.1%, child development at 17.9% and growth chart at 10.6%. Similarly, research conducted in three rural villages on the Indonesian island of Lombok Tengah revealed that 100% of WHO growth charts for children's health records, including graphs for weight-for-height length, height/length-for-age, and head circumference for age, were not completed. The most prevalent reason for not plotting WHO curves in the CHRB was a lack of understanding of how to complete the growth chart (Tengkawan, Anandhika, John, Ihyauddin, Jessica & Karuniawaty, 2020).

Weight is the most commonly recorded growth measurement in PHC clinics in Canada, followed by height and head circumference (Kosowan, Page, Protudjer, Williamson, Queenan & Singer, 2020). Rossiter, Cheng, and Denney-Wilson (2023)

found that certain HCWs lacked confidence in their ability to identify abnormal weight gain and express their concerns to parents.

2.3 AFRICAN PERSPECTIVE ON THE USE OF THE RTHB

The Child Health Record Booklet (CHRB) tracks African baby and child healthcare, reducing infant mortality (WHO, 2019). Tchakoute et al. (2022) revealed that 75% of Cameroonian healthcare workers (HCWs) found the CHRB useful and recommended its use at all levels. Over half of HCWs (65.5%) have never been taught to use the CHRB, limiting its usefulness. This shows a gap in healthcare worker preparedness, raising questions about whether training programs can address CHRB utilisation difficulties.

Melkamu et al. (2019) discovered low growth chart charting in northwest Ethiopia, making it hard to identify and assess nutritionally disadvantaged children. This is a major issue, but the study did not examine systemic barriers, workload, or training that may explain these poor charting rates. In contrast, Kebede et al. (2022) observed that nearly two-thirds of Ethiopian HCWs plotted growth charts during GMP sessions and nearly half could describe development curves to mothers or carers. However, less than half could give good growth curve advice, highlighting the need for counselling skill enhancement.

CHRB use issues go beyond charting and interpreting. Tchakoute et al. (2022) found that 71.1%) of HCWs had problems recording data and 81% had trouble getting CHRB data due to lack of training. These findings highlight the need to teach healthcare workers data management and practical skills to boost CHRB use in Africa.

These studies provide useful insights into CHRB adoption, but few critically evaluate how systemic issues like resource restrictions or poor infrastructure affect child health monitoring tool implementation. These gaps could inform targeted CHRB usage improvements in African healthcare systems, particularly South Africa.

2.4 SOUTH AFRICAN PERSPECTIVE ON THE USE OF RTHB

In South Africa, the CHRB/RtHB underwent numerous changes with regard to HIV prevalence and care on the pathway in order to provide more information, and make it more patient friendly (Manderson & Ross, 2020). Win and Mlambo (2020) reported that vaccine (100%), weight–for-age growth chart (81%), PMTCT/HIV (78%), and oral health examination (7%), were the most completed elements of RtHB. Naidoo et al.

(2018) reported similar findings, where vaccination, weight-for-age, and vitamin A completeness exceeded 80% while weight-for-length and head circumference represented less than 5% of the RtHB.

Mabesa, Knight & Nkwanyana, (2022) results showed that 92% of RtHB were incomplete, with weights, lengths, and MUAC measurements not accurately reported at appropriate intervals based on the age of the child, although the weights, lengths, and MUAC measurements were ticked as recorded, they were not fully completed as recommended for specific age groups. There were inconsistencies in conducting anthropometric measures and recording information on the RtHB (Rapetsoa, Ayuk, Khoza, Mushaphi, and Mbhenyane, 2020). Cader and Naidoo (2019) found that the oral health element of the RtHB was only partially completed, with only 27% completed.

The weight of a child is the most taken anthropometric measurement and plotted in growth charts, unlike length and MUAC (Naidoo et al., 2018; Pedraza & Santos, 2017). Mandiwana (2021) & Mfono (2017) discovered that GMP practices were suboptimal and the implementation of the intervention, such as nutrition counselling, was insufficient. Many HCWs in health facilities are not adequately trained to provide high-quality counselling during GMP services (Global Financing Facility, 2020). The utilisation of RtHB was shown to be suboptimal in primary health care facilities, because weight-for-age and immunisation sections were completed primarily than other sections.

2.5 CHALLENGES FACED BY HEALTH CARE WORKERS IN THE UTILISATION OF RtHB

Challenges faced by HCWs in the effective use of CHRB included incorrect plotting and interpretation of growth charts, which lead to poor counselling of parents /caregivers of children at risk of growth faltering (Sulley, Abizari, Ali, Peprah, Yakubu, Forfoe & Saaka, 2019). Findings by Blaauw et al. (2017) indicated that HCWs believed that adoption of RtHB had significantly increased their workload. In addition to a lack of staff and a large patient population, some HCWs cited limited stock as a barrier to the effective implementation of RtHB.

The results of a study conducted by Situma, Ahoya, and Musungu (2019) on awareness and utilisation of the CHRB in western Kenya indicated that lack of

knowledge and comprehension of the content requirements and completion is a barrier to using the CHRB. Furthermore, Tesfa, Gonete, Chane, and Yohannes (2022) found that approximately half of HCWs have faced issues during growth monitoring techniques. These challenges included reading the growth curve, charting the weight on the growth charts and counseling the mother/caregiver.

2.6 IMPLICATIONS OF NOT USING THE NUTRITION COMPONENT OF RTHB

Malnutrition is the main cause of childhood diseases worldwide (Global Nutrition Report, 2022); The consequences of poor practice or underuse of CHRB/RtHB may result in this condition. Furthermore, malnutrition affects brain development, thus, undernourished may struggle to learn and progress in school (CDC, 2023). Mfono (2017) found that the implementation of GMP in clinics in the Makana Subdistrict of Grahamstown did not require the use of growth or nutritional advice. This is a notable omission since one of the evidence-based recommendations to improve infant health is nutrition counselling for exclusive breastfeeding and appropriate supplementation of food.

2.7 BENEFITS OF USING THE NUTRITION COMPONENT OF THE RtHB

According to Bamford, Martin, Slemming and Richter (2019), RtHB is an inclusive tool and manual for HCWs that outlines objectives of their job and how to organise their communication with young children and/or the people who care for them. The RtHB is a crucial tool for GMP since it evaluates the child's measurements (weight, height, MUAC and head circumference) and charts the child's weight, height, and age using growth charts (DoH, 2020). Knowing how to categorise the child on the growth charts not only leads to counselling, but also aids in referrals for extra management of any identified problems (Global Financing Facility, 2020). Interpreting the RtHBs‘ growth charts strengthens communication between parents/caregivers and HCWs and allows HCWs to implement relevant interventionn.

2.7.1 Plotting the growth charts

The findings of the study conducted by Dimo, Madiba, and Bhayat (2022), showed that most clinics had recommended equipment to measure anthropometric measurements, but not all such measurements were routinely taken and recorded, except for weight measurement. It was also discovered that the measurement charting was inconsistent, except for the weight-for-age chart. Similar findings were reported

by Blaauw et al. (2017), except for weight, most children aged 6 months and older did not have their head circumference, height/lengt and MUAC consistently documented.

A study conducted by Koetaan, Smith, Liebenberg, Brits, Halkas, van Lill, and Joubert (2018) revealed that length-for-age and weight-for-height graphs were typically incomplete. Sokhela et al. (2018) reported similar findings which revealed that while 98.7% of the babies were weighed, only 71% of the weight was plotted, and only 56.3% was classified. Except for plotting weight-for-age charts, other plotting and chart analysis were not fully completed or performed consistently (Dimo et al., 2022; Sulley et al., 2019). The inconsistency of taking anthropometric measurements and plotting growth charts in the RtHB appears to be the main challenge leading to poor identification of children who do not grow appropriately as well as those in need of nutritional intervention.

2.7.2 Interpreting the growth charts and MUAC Measurements

Interpreting growth charts enables HCWs to transmit important information about the children's growth and development to mothers/caregivers. A study by Blaauw et al. (2017) found that half of HCWs (50.2%) correctly diagnosed a MUAC of less than 11.5 cm in children of 6 months and older as SAM. According to Bellini, Becker, Carney, Green, Medico and Van Poots (2020), only 25% of HCWs use MUAC to detect malnutrition in children under five years of age.

A study in the south Wollo zone of Northeast Ethiopia by Kebede et al. (2022) found that only half of the HCWs (50.9%) could understand the growth curve while performing GMP and communicate the result to mothers/caregivers. A similar study conducted by Nsiah-Asamoah, Pereko and Intiful (2019) in selected child welfare clinics in Ghana indicated that 51.3% of nurses inform parents/caregivers of the child weight and write it in the CHRB.

According to Blaauw et al. (2017), the majority of HCWs (68.4%) correctly identified the criterion of being underweight, more than half (54.6%) correctly identified stunting, and less than half (38.7%) correctly identified wasted. On the contrary, Mfono (2017) found no documentation in any of the RtHBs supporting how length measures were interpreted at the primary care level. A study by Mabesa et al (2022) on the completeness of the RtHB in KwaZulu-Natal found that only 9.9% of young children's parents/caregivers could correctly interpret all three growth charts.

2.8 KNOWLEDGE AND PRACTICES OF NURSES ON THE USE OF THE NUTRITIONAL COMPONENT OF RtHB

RtHB improves growth, but HCWs must know how to prevent malnutrition in under-5s (WHO, 2017). HCWs and mothers/caregivers' knowledge, commitment, and participation affect GMP success (Sulley et al., 2019). According to Kebede et al. (2022), 83.4% of HCWs know 0–2-year-olds should be weighed monthly. Melkamu et al. (2019) showed that 92.8% of HCWs supported monthly screenings for 0–2-year-olds. Win (2016) examined Gauteng clinical nurses' knowledge/perceptions of RtHB and found that no clinics measured MUAC since nurses/HCWs didn't know how. The infant's severe or mild malnutrition was impossible to identify.

Sulley et al. (2019) observed that 72.6% of growth charts were incomplete or incorrect, although 70.7% of HCWs knew the CHRB's major components. In Baghdad, Iraq, Hussein and Aldeen (2022) reported that 79% of HCWs used growth charts well and 82.5% understood them. HCWs knew of the GM program, says Mandiwana (2021). They can't reliably measure children under five or interpret growth charts (Kassie & Workie, 2019).

Most women in rural northern Ghana couldn't understand their children's growth charts, according to Seidu, Mogre, Yidana, and Ziem (2021). HCWs were likely too busy weighing and entering data into children's health records to give mothers/caregivers this essential information. RTHB dietary standards for different age groups are essential for tracking children's growth and development. Despite its importance, nurses and other health professionals lack RtHB nutritional expertise (Rockers, Leppänen, Tarullo, Coetzee, Fink, Hamer, Yousafzai, & Evans, 2023). The information gap might lead to inadequate meal guidance for carers, jeopardising children's health.

Nurses' ignorance about RtHB's nutritional benefits makes it hard to see its benefits. Ramathuba et al. (2021) stated that inadequate training and limited access to updated nutritional information can lead to carers getting suboptimal advice, lowering nutritional intervention efficacy. Nursing staff require continuing training and support to adopt healthy eating habits.

2.9. ASSOCIATION BETWEEN KNOWLEDGE, PRACTICE AND SOCIODEMOGRAPHIC OF NURSES ON THE USE NUTRITION COMPONENT OF RtHB

Sociodemographic factors complicate nurses' knowledge and RtHB nutrition implementation. Researchers found that age, experience, and education strongly influence nurses' RtHB use. Due to customs and traditions, older healthcare workers may struggle to adjust to new guidelines or instruments like the RtHB's nutrition component (Abdu, 2024). Nutritional science and online tools are used more by younger nurses to treat patients (Walsh Ryan, McCreary, Ocho, Potisopha & Jeremiah, 2023).

Many years of clinical experience give nurses practical advice, but nutritional training gaps limit RtHB use. Even with modern knowledge, younger nurses may lack the experience to apply theory to patient care (Thabathi, 2023). Age and professional experience interact dynamically, emphasising the need for collaborative learning environments where healthcare professionals can share their knowledge and skills.

Age diversity in nursing teams increases knowledge sharing, helping healthcare teams follow excellent nutritional practices, according to Netshiheni (2023). Based on studies and evolving nutritional needs, younger nurses can give new perspectives, while older nurses can offer practical recommendations. Collaboration is underutilised due to hierarchical management and a lack of intergenerational learning.

Customised sociodemographic professional development programmes could bridge knowledge and practice. Thabathi (2023) suggests culturally appropriate training programs that teach fundamental nutrition and use it in the actual world to enhance nurses' RtHB confidence and competence. This study examines nurses' knowledge and practices of the nutrition component of RtHB to enhance child health outcomes with evidence-based therapies.

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 INTRODUCTION

This chapter outlines the research methodology employed to assess nurses' knowledge and practices regarding the use of the nutritional component of the RtHB in Greater Giyani PHC facilities. It describes the study's research approach, design, sampling techniques, data collection tools, and analysis methods. Additionally, the rationale for selecting each method is provided, alongside measures taken to ensure validity, reliability, and ethical compliance. This detailed methodology ensures that the research process aligns with the study's objectives and addresses potential limitations to enhance the credibility and applicability of the findings

3.1.1. Research approach

The study was quantitative. Leedy and Ormrod (2016) claim quantitative research examines multiple factors. This research technique features measurements, the assumption that phenomena are being observed, large sample sizes, and an emphasis on reactions (Wilson, 2019). This quantitative study used a structured questionnaire to determine Greater Giyani nurses' RtHB nutritional component use.

3.1.2. Research design

A cross-sectional design was applied. According to Setia (2016), a cross-sectional design studies allows the researcher to study a situation as it arises and does not involve changing or modifying the situation or determining a cause-and-effect relationship. A cross-sectional design collects data from various participants at a single event rather than at numerous time points with the same participants. In this study, participants were interviewed once and were not contacted again unless for work-related purpose.

3.2 STUDY SITE

The research was carried out in the Greater Giyani Subdistrict Municipality, which is one of five local municipalities in the Mopani District of Limpopo province (Greater Giyani IDP, 2021). Greater Giyani Municipality has a population of approximately 256,127, of which 34,3% are under the age of 15, 60,9% are between the ages of 15 and 64, and 4,8% are over the age of 65 (Stats SA, 2016).

The municipality is divided into 31 wards and comprises 97 villages. The most commonly spoken language is Xitsonga (91%), followed by Sepedi (3%) and others

1%. There are 28 clinics and two hospitals (one district and one mental hospital) in the area. Most of the health facilities in Greater Giyani are public. Due to accessibility and lack of funds, this study was only focused on the local area of Giyani, which consists of seven clinics and a community health centre.

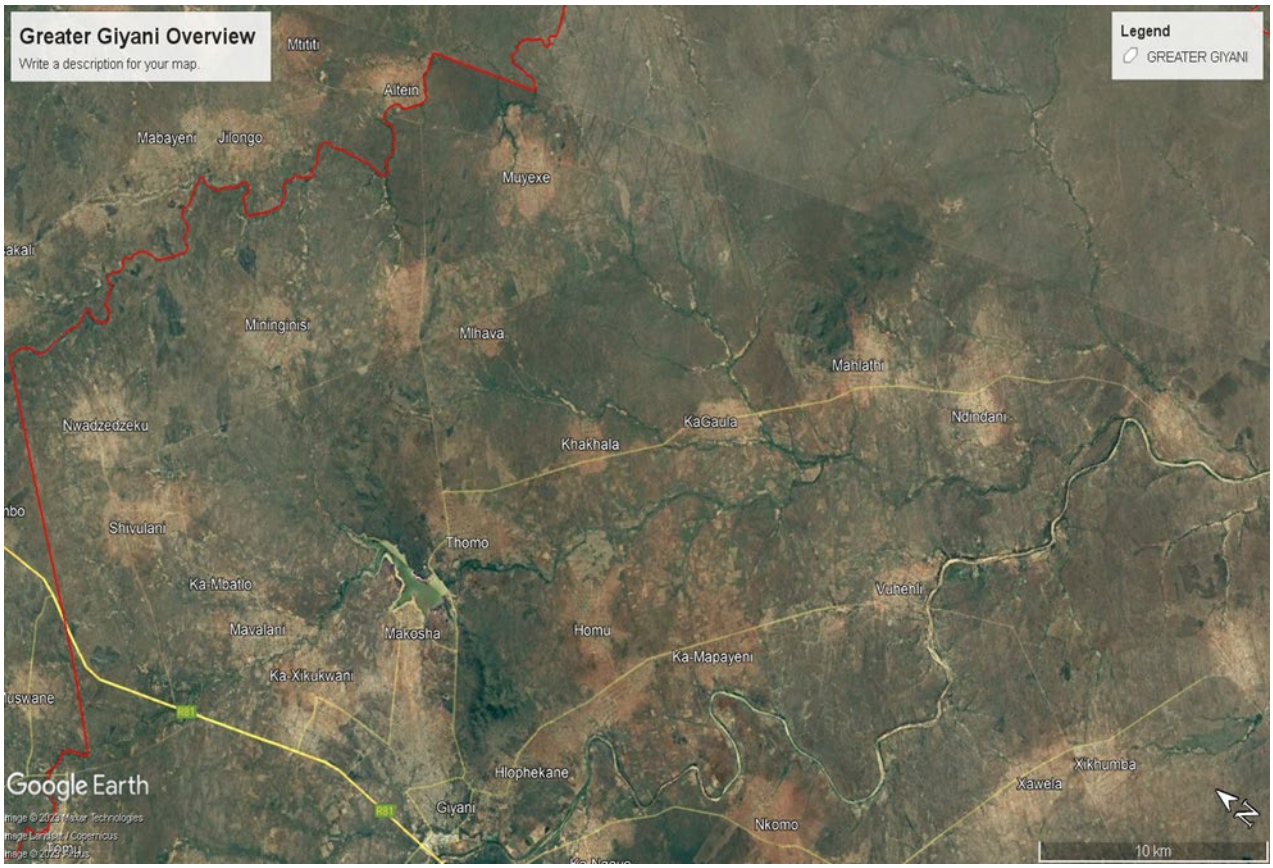

Figure: 1.1 Villages in Greater Giyani. Source: Google Earth Maxar Technologies (2023)

3.3 STUDY POPULATION

Population refers to the total group of individuals or entities with which the researcher is concerned (Manohar, MacMillan, Steiner, & Arora, 2019). The target population for this study was the nursing staff (HCWs) of all categories (professional nurses, registered nurses, and auxiliary nurses (see definition of concepts above) who work in PHC in the local area of Giyani.

3.4. SAMPLING AND SAMPLE SIZE

Due to the small sample size of nursing personnel, consecutive non-probability sampling was applied. According to Palmer (2019), consecutive sampling is a

procedure that involves selecting each subject who fits the inclusion criteria until the needed sample size is obtained. The total number of nursing staff working in the PHC of Giyani local area is 117: 70 professional nurses, 28 staff nurses and 19 auxilliary nurses (DoH Mopani District, 2022) See Table 1 below.

Table 1: Number of nursing staff per clinic

Facility	**Professional Nurses**	**Enrolled Nurses**	**Auxiliary Nurses**	**Total**
Giyani health centre	19	8	8	35
Mapayeni clinic	8	3	2	13
Thomo clinic	7	3	2	12
Mhlava-willem clinic	7	3	2	12
Muyexe clinic	7	3	2	12
Khakhala clinic	6	2	1	9
Nkhensani gateway clinic	8	3	1	12
Shivulani clinic	8	3	1	12
Total	70	28	19	117

(DoH Mopani District, 2022)

3.5 INCLUSION AND EXCLUSION CRITERIA

3.5.1 Inclusion criteria

This concept alludes to characteristics that potential study participants must possess (Hornberger & Rangu, 2020). The following were the study inclusion criteria.

- The participants included professional nurses, registered nurses, and auxiliary nurses in selected PHC facilities with more than 6 months experience.
- All nurses who consented to participate in the study.

3.5.2 Exclusion criteria

This concept refers to the characteristics that prospective participarts must not possess (Hornberger & Rangu, 2020). The following cretiria was applied in this study.

- All professional nurses, registered nurses, and auxiliary nurses who have been employed in the selected PHC facilities for less than six months.

- All nurses who did not consent to participate in the study.

3.6 DATA COLLECTION

Data collection is an important part of the research process because it lays the foundation for understanding and analysing the phenomena under examination. (Petchko, 2023).

3.6.1 Data collection tool

A questionnaire was used to collect data. This questionnaire was adopted from the one employed in the cross-sectional study of Mfono (2017) and modified with cross-sectional studies from other researchers (Mandiwana, 2021); Situma, Ahoya, and Musungu (2019); Sokhela, Sibiya and Gwele (2018). A questionnaire comprises a written list of questions that participants respond to without the researcher clarifying or explaining the questions (Kumar, 2019). The researcher administered the questionnaire to all the participating nurses to ensure that all questions were posed in the same order and all were answered. The questionnaire consisted of three sections as follows: Section A - demographic information, Section B – nurses' knowledge of the use of the nutrition component of the RtHB, and Section C – nurses' practices of the use of the nutrition component of RtHB.

3.6.2 Data collection procedure

Data collect began after obtaining authorisation from the Provincial and District Offices of the Department of Health to access PHC clinics in the Greater Giyani. The data were collected between February and April 2024. The researcher was responsible for administering the questionnaire to nursing staff to improve the quality of the data obtained. Data collection was expected to take two days at each sampled clinic but took four to five days per clinic due to the large number of nursing personnel who needed to be interviewed. Data collection took place from Monday through to Saturday, depending on the availability of nurses, and sometimes at night due to their work schedules. The interviews were conducted in a relaxed environment allowing participants to share their knowledge and expertise. The questionnaire took 30 to 45 minutes to complete. Before starting with data collection, the researcher visited all the PHC clinics to talk to the clinic managers and confirm the appropriate dates for the interview. During these visits, the objectives of the study and what was expected of the study participants were discussed as part of the data collection process. Two days

before the start of data collection, the clinics were reminded of the scheduled date and the nursing staff were given a consent form that they were asked to sign before entering the study. Only those who gave their informed consent were considered to be included in the research sample.

3.6.3 Pilot study and pretesting

A Pilot studies are small-scale examinations preceding larger research with fewer participants (Brink, van der Walt & van Rensburg, 2018). Meta Connects (2018) states that pre-testing helps researchers identify effective, unusual, removable, and practical questions. Greater Giyani primary care facilities hosted the pilot and pre-testing. To assess the study's viability, researchers tested research equipment for ease of use and identified and fixed data-gathering concerns. Pilot interviews included 10 nurses. The researcher found the equipment needed tweaking after flying. Minimal understanding and proper practices among nurses. Therefore, the pilot study identified and fixed research instrument flaws and other issues that could compromise the study's reliability and validity. Pilot research data was excluded from the main study.

3.7 DATA ANALYSIS

After coding was completed, the data was cleaned and entered on a Microsoft Excel spreadsheet. SPSS version 28.0 was used, and data were checked to remove any errors. Descriptive statistics were used to examine participants' means, percentages, and frequency distributions. Descriptive statistics, for example frequency and cross tabulations, were used to analyse categorical variables and characteristics of the population (Wilson, 2019). Age, sex, nursing category, and number of years of work experience were among the descriptive characteristics. To determine the link between demographic factors and knowledge and practices, bivariate analysis with Chi-square was used. The threshold for statistical significance of the results was set at $P< 0.05$.

3.8 RELIABILITY AND VALIDITY

According to Shantkumar (2018), face validity describes how well a test or instrument assesses what it is supposed to measure. In this study, a questionnaire was submitted to nutrition professionals in the field of nutrition (dietitians and nutritionists) to proofread and validate the flow of questions. problems relating to the readability and ease of comprehension of the questions were rectified based on the experts' comments.

The validity of the content of an instrument describes whether it is systematically and comprehensively representative of the characteristic being measured (Meron & John, 2019). In this study, the questionnaire covered the following aspects: nurses 'knowledge and practices in the use of the nutritional component of RtHB. The researcher administered the same questionnaire to all participants to ensure the consistency and completeness of the data collection process.

3.9 ETHICAL CONSIDERATIONS

The research proposal was presented to the Department of Public Health and submitted to the school of Health sciences, University of Limpopo research ethics committee for approval from the faculty research committee. Ethical clearance was obtained from the Turfloop Research and Ethics Committee (TREC). Permission to access health facilities to collect data was requested from the Department of Health (Mopani District).

3.9.1 Informed consent

Informed consent requires informing potential research participants of the study's goal and pros and cons (Goyal, Wice, and Miller, 2019). An information brochure was provided to participants two weeks before data collection (Annexure A). The researcher addressed issues. Study participants were assured they could leave at any time without penalty. The nurses gave verbal or written informed consent for the study.

3.9.2 Confidentiality and privacy

Researchers must protect participants' personal data and ensure that study data cannot be utilised for other purposes (Wilson, 2019). To protect participants' identities, this study coded their names. By deleting personal data, our technique maintained participant anonymity throughout the research process. All data was password-protected and locked in electronic and physical files.

Privacy is the right to control how much personal information people share and to engage in studies anonymously (Leedy & Ormrod, 2016). All interviews in this study were done in a private, enclosed room for the researcher and participant. This setup minimised interruptions and let participants speak freely. The researcher organised interviews at convenient times for participants to limit interruption to their personal and professional lives.

Respecting anonymity and privacy preserved study participants' rights and dignity. These measures helped researchers and participants trust each other and answer questions honestly during data collection.

3.9.3 Harm

In addition to physical risks, research participants may suffer psychological, emotional, or social harm. The fear, harassment, embarrassment, and privacy invasion can occur (Kumar, 2019). By not requiring blood or tissue access, this study was ethically done to protect participants.

The researcher knew that discussing knowledge gaps or professional practices could offend people. Before data collection, participants were told their participation was voluntary and they could leave the study at any time without consequence. The researcher also developed a courteous interview environment to let participants feel comfortable discussing their thoughts.

Support was given immediately if involvement caused emotional discomfort. Emotionally distressed trial participants were sent to hospital social workers or counselling facilities. These experts could help research participants manage stress.

The study instrument was piloted to ensure that the questions were straightforward, non-invasive, and free of insulting or judgemental language or substance to minimise harm. Through proactive harm prevention and participant safety and dignity, the study followed ethical research norms.

3.9.4 Bias

Bias is defined as an effect that causes an inaccuracy or prejudice in the quality of evidence (Brink et al., 2018). Bias was not completely avoided in the study selection, and the information collection process, and, thereafter, researcher bias was likely to occur. The identified bias was minimised as follows.

- According to Wilson (2019), selection bias occurs when the study population does not precisely reflect the target group and conclusions cannot be reached about the number of risks or benefits for that population. In this study, selection bias was minimised by conveniently including all nurses in the selected facilities.

- Information bias occurs when data used in a study are either improperly quantified or documented (Kesmodel, 2018). In this study, information bias was

minimized by first piloting the questionnaire to a PHC facility that did not participate in the final research process. The researcher translated the questionnaire into the local spoken language (Xitsonga) so that participants understood the content. The questionnaire mainly contained closed-ended questions to minimise information bias.

- Researcher bias can occur when a researcher selectively chooses certain participants for enrollment in a study on the assumption that they will benefit from the intervention (Wilson, 2019). In this study, the bias of the researcher was minimised by using the consecutive sampling method to select the sample. The researcher followed the research methods when interviewing participants instead of her knowledge of the subject.

3.9.5 Covid-19

All covid-19 protocols were followed. All participants were sanitised and the wearing of mask was mandatory. Participants and the researcher engaged in the sanitisation processes before the completion of each questionnaire to limit the spread of viruses.

3.10 CONCLUSION

The study included all facilities with nursing staff that met inclusion criteria, ensuring target population representation. University of Limpopo Turfloop Research and Ethics Committee (TREC) ethical permission, and Limpopo Department of Health hospital access. This approval verified the study's ethics.

Certain precautions were made to protect people from psychological or emotional harm and maintain privacy. Following tight methodological guidelines and piloting the data collection instrument increased the study's reliability and validity. These rules protected the study and improved nurses' RtHB nutritional understanding and practice.

CHAPTER FOUR: RESULTS

4.1 INTRODUCTION

The study findings are reported and interpreted in this chapter. This chapter is organised into three sections: Sociodemographic information, knowledge, practices, and associations between the knowledge and practices of nurses on the use of the nutrition component of RtHB. A total of 107 out of 117 selected participants participated in this study resulting in a response rate of 91.5%.

4.2 SOCIODEMOGRAPHIC INFORMATION OF NURSES

Table 4.1. Sociodemographic information

Variables	Categories	N=107 (%)
Location of clinic	Urban	34(31.8)
	Rural	73(68.2)
Age	Mean ±SD	43.9 ± 9.38
	Min-max	23 - 62
Sex	Male	14(13.1)
	Female	93(86.9)
Category of nursing	Enrolled nursing assistant	26(24.3)
	Staff Nurse	19(17.8)
	Professional Nurse	62(57.9)
Work experience	1-6 year	34(31.2)
	7-10 years	65(60.1)
	More than 10 years	8(7.5)
Years working in the child health section	1-6 years	27(25.4)
	7-10 years	25(23.4)
	More than 10 years	55(51.4)

Table 4.1. Present sociodemographic information. The results showed that the majority of PHC clinics (68.2%) were located in rural areas and urban areas represented 31.8%. The mean age of the participants is 43.9 ± 9.387. The majority (86.9%) of the nurses were women and the minority were men (13.1%). Most of the participants were professional nurses (57.9%), followed by enrolled nursing assistants (24.3%). Most nurses (60.1%) had 7-10 years of work experience, 31.2% had 1-6 years of work experience, and 7.5% had more than 10 years of work experience.

Table 4.2. RtHB training received

Variables	Category	N=107
Where did you receive training on RtHB?	Nursing college	20(18.7)
	University while studying	7(6.5)
	Department of Health workshops	80(74.7)

When did you receive your last training?	Between 2011 and 2017	49(45.8)
	Between 2018 and 2021	58(54.2)
Aspects covered during training.	Plot points for growth indicators	85(79.4)
	Interpreting growth indicators	81(75.7)
	Procedures of taking measurements	63(58.9)
	Immunisation	95(88.8)
Where do you receive refresher training on RtHB?	DOH	98(97.0)
	From NGO's	9(8.4)
When did you receive refresher training on RtHB?	More than 2 years ago	46(43.0)
	1 year ago	52(48.5)
	Within the past six months	9(8.4)

Table 4.2 above presents details of the participants' RtHB training and shows that most nurses (74.7%) received their training on RtHB at the Department of Health workshops, followed by the nursing school (18.7%). The last training received by participants(54.2%) on RtHB was between 2018 and 2021. Aspects covered during the training included a combination of plotting points for growth indicators (79.4%), interpreting them (75.7%), and procedures for taking anthropometric measurements (58.9%), while the majority of participants were trained on immunization (88.8%). Almost half of the nurses (48.5%) had received refresher courses one year ago and the least number (8.4%) within the past six months.

4.3 KNOWLEDGE OF THE NURSING PERSONNEL ON THE USE OF NUTRITION COMPONENT

Table 4.3 – Bloom cut-off categories for total knowledge scores (**N=107**).

	Category	**Scores**	**N(%)**
Knowledge level	High level	14-18	27(25.2)
	Moderate level	11-13	42(39.3)
	Low level	0-10	38(35.5)
Total			107(100)

Table 4.3. above presents the knowledge score categories of the nurses on the use of the nutrition component of RtHB. The knowledge scores were rated on 18 questions. Almost 40% of the nurses had a moderate level of knowledge and 35.5% had a low level of knowledge regarding the use of the nutrition component of RtHB.

4.4 NURSING PERSONNEL PRACTICE ON THE USE OF THE NUTRITIONAL COMPONENT OF RTHB.

Table 4.4. Practices score categories (N-107)

	Category	**Scores**	**N(%)**
Practices	Poor	1 - 8	13(12.1)
	Fair	9 - 13	83(77.6)
	Good	14 -19	11(10.3)
Total			107(100)

Table 4.4 above presents the practice score of the nurses. The results showed that the majority of nurses (77.6%) had a fair score on the practices in the use of the nutritional component of the RtHB, while 10.3% had a good score.

4.5 ASSOCIATION BETWEEN SELECTED SOCIODEMOGRAPHIC INFORMATION AND KNOWLEDGE

Table 4.5. Association between sociodemographic information and knowledge

Variables	**Response categories**	**Total =107**	**Knowledge**			
			Low N(%)	**Moderate N(%)**	**High N(%)**	**P-values**
Location of the clinic	Urban	34	9(26.5)	15(44.1)	10(29.4)	0.408
	Rural	73	29(39.7)	27(37.0)	17(23.3)	
Age	<35	24	7(29.2)	8(33.3)	9(37.5)	0.253
	36 – 45	28	11(39.3)	9(32.1)	8(28.6)	
	46 – 55	47	18(38.3)	19(40.4)	10(21.3)	
	>55	8	2(25.0)	6(75.0)	0	
Gender	Male	14	6(42.9)	2(14.3)	6(42.9)	0.091
	Female	93	32(34.4)	40(43.0)	21(22.6)	

Nursing category	Enrolled nursing assistance	26	16(61.5)	8(30.8)	2(7.7)	0.019
	Staff Nurse	19	5(26.3)	9(47.4)	5(26.3)	
	Professional nurse	62	17(27.4)	25(40.3)	20(32.8)	
Working experience	1-3 years	13	8(61.5)	3(23.1)	2(15.4)	0.036
	4-6 years	21	6(28.6)	5(23.8)	10(47.6)	
	7-10 years	65	23(35.4)	30(46.2)	12(18.5)	
	More than 10 years	8	1(12.5)	4(50.0)	3(37.5)	

Table 4.5. above showed that there was no statistically significant association between knowledge and age (P = 0.253) and sex (P = 0.091). However, there was a significant relationship between knowledge and category of nurses (P = 0.019), and clinical experience (P = 0.036).

Table 4.6. Association between knowledge and anthropometric practices of nurses on the nutrition component of RtHB

Variables	**Response categories**	**Total =107**	**Knowledge**			
			High level N(%)	**Moderate level N(%)**	**Low level N(%)**	**P-values**
Do you usually use RtHB during child health services?	Yes	103	36(35.0)	41((39.8)	26(25.0)	0.794
	No	4	2(50.0)	1(25.0)	1(25.0)	
How often do you measure the the child's weight and interpret it?	Every month	53	18(34.)	22(41.5)	13(24.5)	0.892
	Every visit	54	20(37)	20(37.0)	14(25.9)	
How often do you measure the child's height and interpret it?	Every month	20	8(40.0)	6(30.0)	6(30.0)	0.349
	Every visit	21	5(23.8)	12(57.1)	4(19.0)	
	Every three month	24	12(50.0)	8(33.3)	4(16.7)	
	Every six month	42	13(31.0)	16(38.1)	13(31.0)	
At which intervals do you take MUAC and interpret it?	At birth, then every visit	14	5(35.7)	6(42.9)	3(21.4)	0.628
	At three months, then every visit	26	12(46.2	10(38.5)	4(15.4)	

	At six months, then every visit	61	18(29.5)	25(41.00	18(29.5)	
	Once every year	6	3(50.0)	1(16.7)	2(33.3)	
When do you measure the head circumference?	At birth, 14 weeks and 1 year	101	36(35.0)	40(40.0)	26(25.0)	0,049
	At 10 weeks and 1 year	1	0	1(100.0)	0	
	At 6 weeks and 1 year	5	2(40.0)	1(20.0)	2(40.0)	

Table 4.6 above Shows that there was no statistical association between knowledge and the use of RtHB during child health services (P = 0.794), weight measurement and interpreting (p = 0.892), height measurement and interpreting (P = 0.349), and MUAC measurement and interpreting (P = 0.628). However, there was a slight statistical significance between knowledge and measurement of head circumference (P = 0.049).

Table 4.7 Association between knowledge and nutritional counseling practices

Variables	**Response categories**	**Total =107**	**Knowledge**			
			High level N(%)	**Moderate level N(%)**	**Low level N(%)**	**P-values**
What type of nutritional counselling do you provide to mothers/caregivers of children under the age of 6 months?	Breastfeeding	97	33(34.0)	40(41.2)	24(24.7)	0.493
	Complementary feeding	6	2(33.3)	2933.3)	2(33.3)	
	Growth monitoring	2	2(100.0)	0	0	
	Vitamin and deworming	2	1(50.0)	0	1(50.00	
If the mother has breastfeeding problems, how do you deal with them?	Advise the mother to formula feed and use the feeding cup	64	24(37.5)	25(29.1)	15(23.4)	0,607

	Continue with breastfeeding	33	11(33.3)	13(39.4)	9(27.3)	
	Breastfeeding and formula feeding	5	2(40.0)	3(60.0)	0	
	Give complementary foods	4	1(25.0)	1(25.0)	2(50.0)	
	Do not know	1	0	0	1(100.0)	
What type of nutritional counselling do you generally give to mothers/caregivers with children from 6 months to 1 year?	Breastfeeding	15	11(73.3)	2(13.3)	2(13.3)	0,028
	Complementary feeding	81	23(28.4)	34(42.0)	24(29.6)	
	Growth monitoring	1	0	1(100.0)	0	
	Vitamin A and deworming	10	4(40.0)	5(50.0)	1(10.0)	
What type of feeding messages do you typically send to mothers/caregivers with children aged 6 to 8 months?	Breast milk and other family food	60	22(36.7)	22(36.7)	16(27.7)	0.532
	Food should provide sufficient energy, protein and micronutrients to meet the nutritional needs of a growing child	43	13(30.2)	19(44.2)	11(25.6)	
	Soft porridge only	2	2(100.0)	0	0	
	Feeding anything available in the family	2	1(50.0)	1(50.0)	0	
How much of these foods should be given to children from 6 to 8 months per feeding at a time?	1 - 2 teaspoons of food and gradually increase the amount and frequency	68	22(32.4)	25(36.8)	21(30.9)	0.186

	3 – 5 teaspoons of food and gradually increase the amount and frequency	12	8(66.7)	3(25.0)	1(8.3)	
	6 – 10 teaspoons of food and gradually increase the amount and frequency	13	3(23.1)	7(53.8)	3(23.1)	
	½ cup of food and gradually increase the amount and frequency	14	5(35.7)	7(50.0)	2(14.3)	
How often should these foods be given to children from 6 to 8 months each day?	Twice per day	67	22(32.8)	24(35.8)	21(31.3)	0.126
	Four times per day	30	11(36.7)	16(53.3)	3(10.0)	
	Six times per day	2	0	1(50.0)	1(50.0)	
	Any time	8	5(62.5)	1(12.5)	2(25.0)	
What types of feeding messages do you normally send to mothers/caregivers with children aged 9 to 11 months?	Breast milk and soft porridge	35	13(37.1)	9(25.7)	13(37.1)	0.205
	Food should provide Sufficient energy, protein and micronutrients to meet nutritional needs a growing child.	63	22(34.9)	28(44.4)	13(20.6)	
	Feeding anything available in the family	9	3(33.3)	5(55.6)	1(11.1)	
How much of these foods should be given to children of 9 to 11 months of age?	1 - 2 teaspoons of food and gradually increase the	7	3(42.9)	2(28.6)	2(28.6)	0.920

	amount and frequency					
	3 – 5 teaspoons of food and gradually increase the amount and frequency	33	11(33.3)	13(39.4)	9(27.3)	
	6 – 10 teaspoons of food and gradually increase the amount and frequency	15	7(46.7)	6(40.0)	2(13.3)	
	1/4 cup of food and gradually increase the amount and frequency	52	17(32.7)	21(40.4)	14(26.9)	
How often should these foods be given to children from 9 to 11 months each day?	Twice per day	19	10(52.6)	5(26.3)	4(21.1)	0.382
	Four times per day	47	14(29.8)	22(46.8)	11(23.4)	
	Five times per day	34	10(29.4)	14(41.2)	10(29.4)	
	Six times time	7	4(57.1)	1(14.3)	2(28.6)	
What message or advice do you have for mothers/caregivers whose children experience diarrhoea and vomiting?	Breastfeeding on demand	6	2(33.3)	4(66.7)	0	0.222
	Advice on giving them a Sugar Salt Solution (SSS) to drink after each stool.	100	36(36.0)	38(38.0)	26(26.0)	
	Advice on feeding small frequent meals	1	0	0	1(100.0)	

What message do you send to mothers/caregivers about immunization?	Follow the immunization schedule or routine in RTHB and bring your children every month at the facility		106	37(34.9)	42(39.6)	27(25.5)	0.400
	Do not know		1	1(100)	0	0	
Which conditions prompt you to refer a child under 6 months of age to other health care workers? Tick two options.	Not breastfeeding well	Did not	50	13(26.0)	25(50.0)	12(24.0)	0.074
		did	57	25(43.9)	17(29.8)	15(26.3)	
	Not gaining well	Did not	39	16(41.0)	17(43.6)	6(15.4)	0.204
		Did	68	22(32.4)	25(36.8)	21(30.9)	
	Flatten curve	Did not	84	31(36.9)	27(32.1)	26(31.0)	0.006
		Did	23	7(30.4)	15(65.2)	1(4.3)	
	When the child is sick	Did not	41	16(39.0)	15(36.6)	10(24.4)	0.831
		Did	66	22(33.3)	27(40.9)	17(25.8)	
Which condition prompts you to refer a child over 6 months of age to other HCWs?	Not gaining well & flatten curve	Did not	58	26(44.8)	21(36.2)	11(19.0)	0.068
		Did	49	12(24.5)	21(42.9)	16(32.7)	

Table. 4.7 above shows that there was no statistical association between knowledge and the type of nutritional counselling given to mothers/caregivers of children under the age of 6 months (P = 0.493), advice given to mothers/caregivers whose children experience diarrhea and vomiting (P = 0.222), the message given to mothers/caregivers on immunisation (P = 0.400) and also referring a sick child under the age of 6 months to other HCWs (P = 0.831). However, there was a relationship between nutritional counselling given to mothers/caregivers of children 6 months to 1

year (P = 0.028), and conditions that led them to refer children under 6 months of age to other HCWs when the growth curve flattens (P = 0.006).

4.6 ASSOCIATION BETWEEN SELECTED SOCIODEMOGRAPHIC INFORMATION AND PRACTICE

Table 4.8. Association between selected sociodemographic information and practices (N=107)

Variables	Response categories	Total =107	Practices			
			Poor N(%)	Fair N(%)	Good N(%)	P-values
Location of the clinic	Urban	34	6(17.6)	26(76.5)	2(5.9)	0,335
	Rural	73	7(9.6)	57(78.1)	9(12.)	
Age	<35	24	1(4.2)	19(79.4)	4(16.7)	0.465
	36 – 45	28	6(21.4)	20(71.4)	2(7.1)	
	46 – 55	47	5(10.6)	37(78.7)	5(10.6)	
	>55	8	1(12.5)	7(87.5)	0	
Gender	Male	14	1(7.1)	10(71.4)	3(21.4)	0.308
	Female	93	12(12.9)	73(78.5)	8(8.6)	
Nursing category	Enrolled nursing assistance	26	0	22(84.6)	4(15.4)	0.252
	Staff Nurse	19	3(15.8)	14(73.7)	2(10.5)	
	Professional nurse	62	10(16.1)	47(75.8)	5(8.1)	
Working experience	1-3 years	13	0	8(61.5)	5(38.5)	0.011
	4-6 years	21	3(14.4)	18(61.5)	5(38.5)	
	7-10 years	65	8(12.5)	51(78.5)	6(9.2)	
	More than 10 years	8	2(25)	6(75)	0	

Table 4.8 above showed that there was no statistically significant association between practices and age (P = 0.335), gender (P = 0.308) and nursing personnel category (P = 0.252). However, there was a slightly significant relationship between the practice and work experience of the nurses in the PHC clinic (P = 0.011).

Table 4.9. Association between overall knowledge and overall practices.

	Overall knowledge			**P-value**
Overall practices	Low level	Moderate level	High level	
Poor	0	6(46.2%)	7(53.8%)	0.002
Fair	30(36.1%)	33(39.8%)	20(24.1)	
Good	8(72.7%)	3(27.3%)	0(0%)	

Table 4.9 above showed that there was a significant association between overall knowledge and overall practice of nurses in the use of the nutritional component of RtHB (P = 0.002).

CHAPTER 5: DISCUSSION

5.1 INTRODUCTION

In the previous chapter, the methodology applied in this investigation was outlined. The study findings are discussed in this chapter. Chapter 5 is organised into 4 sections: Sociodemographic information of participants, nurses' knowledge of the use

of the RtHB nutrition component, nurses' practices relating to the use of the RtHB nutrition component and the association between sociodemographic information, knowledge, and practices.

5.2 SOCIODEMOGRAPHIC INFORMATION

Of the 107 participants, 73 (68.2%) worked in rural clinics and 34(31.8%) worked in urban clinics. Most of the nurses were women 93(86.9%) and 14(31.1%) were men. The majority (43.9%) were aged between 46-55 years old and 22.4% were less than 35 years old (see Table 4.1 above). Most participants were professional nurses (57.9%), followed by registered nurses (24.3%) and staff nurses (17.8%). This division agreed with a study conducted by Mandiwana (2021), on the efficacy and related factors of the growth monitoring and promotion programme in the PHC clinics in the Vhembe district. The results showed that the majority of participants (35.6%) were professional nurses, followed by nursing assistants (26.0%). Most nurses (60.1%) had 7-10 years' work experience, 31.2% had 1-6 years' work experience, and 7.5% had more than 10 years' work experience. In contrast to the current study, a study conducted by Win and Mlambo (2020) revealed that most of the nursing staff had 11-20 years' experience (56%) in providing child health services, while 44% had more than 20 years' experience.

Most nurses (74.7%) received their training on RtHB at the Department of Health workshops, while 18.7% receive this training at nursing college. This finding is in line with a study by Kebede, Dawed, and Seid (2022), which stated that more than three-quarters (78.0%) of the RtHB training was provided by the District Health Office. The last RtHB training given to 46.7% participants was between 2018 and 2021. The aspects covered during this training included a combination of plotting points for growth indicators (79.4%), interpreting them (75.7%), procedures for taking anthropometric measurements (58.9%). Most participants (88.8%) were trained in immunization. This finding is in line with a study by Kebede et al. (2022) on the practice of monitoring and promotion of child growth and associated factors among HCWs in public health facilities in the southern Wollo zone of Northeast Ethiopia. The study results showed that the most common types of training received by respondents were weight skill (40.1%), the growth chart plotting technique (39.2%) and child feeding counselling (20.8%).

Almost half (48.5%) of the participating nurses indicated having received refresher courses one year ago and the least number of participants within the past six months (8.4%). This study agreed with a study by Mandiwana (2021) in which the majority of the nursing staff reported that they engaged in refresher courses on an annual basis (28.5%), followed by 20.7% who had only received refresher training once after some years and while 14.1% attened refresher training twice per year.

5.3 KNOWLEDGE OF THE NURSES ON THE USE OF THE NUTRITION COMPONENT OF RTHB

As detailed in Table 4.2, almost 40% of nurses had a moderate level of knowledge, 35.5% a low level, and only 25.2% had a high level of knowledge of the Nutritional component of RtHB. On the contrary, a study conducted by Dimo et al. (2022) found that almost two-thirds (61%) of nurses had good knowledge, followed by 33% with excellent knowledge, and 6% had poor knowledge. A study conducted by Melkamu, Bitew, Muhammad and Hunegnaw, (2019), on the prevalence of growth monitoring practice and its associated factors in public health facilities of the north Gondar zone, northwest Ethiopia, also found that half of the study participants (50.4%) managed to achieve the defined acceptable total knowledge score of 75%. The finding of a study conducted by Nziku (2022) on knowledge, attitude and practice of HCWs in children under five's nutritional evaluation in Njombe Town Council, Tanzania, likewise revealed that most of HCWs a had moderate knowledge (68.4%) of nutritional evaluation.

In the area regarding the interpretation of the Z-score in the RtHB, a limited knowledge gap has been identified. For example, 52.3% of the participants correctly indicated that a child whose height-for-age below the – 2 Z-score line should be classified as wasted. This results shows that the level of knowledge of the nurse category has an impact on the use of the nutrition component of RtHB. However, it was not significant that nurses over 55 years had moderate knowledge (75%) compared to nurses below 35 years (33.3%), this finding is similar to a study by Dimo et al. (2023) which indicated that nurses over 47 years of age had a higher mean knowledge score compared to younger participants.

5.4 NURSING PERSONNEL PRACTICE ON THE USE OF THE NUTRITIONAL COMPONENT OF RtHB.

The study findings showed that the majority of nurses (77.6%) had a fair score on practice, followed by (12.1%) with a poor score and 10.3% with a good score. On the contrary, a study by Dimo et al. (2023) revealed that the practice categories indicated that two-thirds of the participants (61%) showed poor practices, while 21% had good practices, and only 18% showed best practices. Furthermore, the results of a study by Uwera (2022) on nurses' knowledge and practice in the management of childhood malnutrition in selected health centres in Rwanda, showed that of the 196 nurses, 61% had a high level of practice in the malnutrition management, 13% had a low level of practice and 26% had a moderate level of practice. For example, 50.5% of the participants correctly indicated that weight should be measured and interpreted monthly and 57% indicated that MUAC was taken at six months and, thereafter, every visit up to five years of age. The study conducted by Melkamu et al .(2019) found that 41.2% of participants plotted the weight of the children on growth charts in health centres, 90.8% of the participants used growth charts, and 70.2% of the participants undressed the children before weighing to obtain accurate figures. Compared to other research, the findings of the current study indicate that the level of nursing staff practice was appropriate.

5.5 ASSOCIATION BETWEEN SELECTED SOCIODEMOGRAPHIC VARIABLES AND KNOWLEDGE

The results of this study showed no statistically significant association between participants' knowledge, age and sex. The finding was consistent with a study conducted by Hassan, Baiee, Shaban, El Sayed Zaky and Mahdi (2023) revealed that the gender, occupation and age group showed a non-significant association with the growth chart knowledge score among HCWs in Al-Hilla PHC services ($P < 0.05$) for all. The current study also disagrees with the finding of an earlier study conducted in Qualyobia Governorate, Egypt, by Mahmoud, Mohamed, Mohamed and Elrahman (2023) on the knowledge of maternal and child health centre nurses about stunting. The earlier study found a highly statistically significant relationship ($P < 0.001$) between the total level of knowledge of nurses and their age, education level, and years of experience. This results means that variables such as age, gender, and work

experience did not appear to impact how well the nurses understood or used the nutrition component of the CHRB.

However, there was a positive relationship between knowledge and category of nurses and work experience in the facilities ($P < 0.05$). The results of current study were consistent with a study conducted by Uwera (2022) in selected health centres in Rwanda, where working experience showed relationships with nurses' knowledge of the management of child malnutrition ($P < 0.001$). Additionally, in agreement with a study conducted by Ibikunle, Okafor and Adejimi (2021). the finding indicated a significant correlation between nutrition knowledge and the following vocational characteristics of HCWs: cadre, length of practice, and participation in the treatment of children with severe malnutrition. However, research by Dimo et al. (2022) revealed no significant correlation ($P = 0.29$) between knowledge level and work experience. However, the current study showed that nurses with more years of experience were more knowledgeable than those with fewer years. Factors such as nursing category and work experience appear to influence knowledge levels, highlighting the need for targeted training and support.

5.5.1 Association between knowledge and anthropometric practices variables

The study results showed that there was no statistical association between knowledge and anthropometric measurements (weight, height, MUAC and interpretation) ($P > 0.05$). The results of the current study were in agreement with that of Dimo et al. (2022), which indicated no correlation between knowledge and practice patterns for diagnosis of child malnutrition ($P > 0.05$). The current study's finding also disagreed with Mandiwana's (2021) study, that indicated a substantial positive association ($P < 0.000$) between nurses' comprehension of growth monitoring and promotion and their ability to read growth markers. This finding might occured because the anthropometric practices of nurses were not grounded in their expertise, leading to an association between inadequate practices and lower knowledge levels.

5.5.2 Association between knowledge and nutritional counselling practices

The current study's results showed that there was no statistical association between knowledge and the type of nutritional counselling given to mothers/caregivers of children under the age of six months, children experiencing diarrhea and vomiting, and

referral to other HCWs when the child is sick(P > 0.05). These results are in contrast to those of a study conducted by Kiran, Kujur, Sagar, Singh, Kashyap, Trivedi, Kumari, Akhouri, Jha, Lakra and Badanayak (2022) on the knowledge and practices of nursing staff related to Maternal Nutrition and Infant and Young Child Nutrition (MIYCN) services at the Rajendra Institute of Medical Sciences, India. The study found a significant positive correlation between counselling provided by HCWs to mothers of babies aged 0 to 6 months on exclusive breastfeeding for the first 6 months (P < 0.05) and breastfeeding when both the mother and the child are sick (P < 0.000).

However, there was a significant relationship between nutritional counselling provided to mothers/caregivers of children aged 6 months to 1 year (P= 0.028), and conditions that led nurses to refer children under 6 months of age to other HCWs when the growth curve is flattening (P = 0.006). The results of this current study are in agreement with a study conducted by Kiran et al. (2022), that found a significant positive correlation between advice on dietary diversity (P < 0.05), safe preparation and storage of complementary foods (P = 0.004), and the introduction of complementary feeding after 6 months (P < 0.05). The current study disagreed with a study by Odo, Omojola and Etchie (2022) on the level of knowledge and teaching of infant and young child feeding practices among HCWs in the Delta state which reported that no association was observed between the knowledge of HCWs and their option regarding when mothers should start complementary feeding (P = 0.179). The current finding also disagreed with a study by Melkamu et al. (2019) that showed even though mothers received nutritional counselling after weighing their children, HCWs did not advise them based on the age of the children and position of the growth curve.

5.6 ASSOCIATION BETWEEN PRACTICES AND SELECTED SOCIODEMOGRAPHIC VARIABLES

This study showed no statistically significant association between practices and age, sex, and category of nursing personnel (P > 0.05). These findings disagreed with those of Mahmoud et al. (2023), who reported high statistically significant relationships between the practices of nurses studied and their age (P ≤ 0.001). There was a slightly significant relationship between practices and work experience in the PHC clinics (P = 0.011). The findings of the current study were consistent with a study conducted by Kebede et al. (2022) which indicated that work experience of more than 11 years and the GMP training received had a positive association with practices. These findings

also agreed with those of Mahmoud et al. (2023) who reported high statistically significant relationships between the practices of the nurses and their years of experience. Conversely, the current study shows that the age and category of nursing does not influence the practices of nurses in the use of the nutritional component of the RtHB.

5.7 ASSOCIATION BETWEEN OVERALL KNOWLEDGE AND OVERALL PRACTICES OF THE NUTRITION COMPONENT OF RtHB

The results of the current study showed a significant association between total knowledge and total nurses' practices on the use of the nutrition component of RtHB ($P < 0.002$). These findings were consistent with those of Mahmoud et al. (2023), regarding the nurses' awareness of Stunting at maternal and child health centres in Qualyobia Governorate Egypt, thus, indicating that there was a highly statistically significant relationship between the total level of knowledge of the nurses studied and the total level of practices ($P < 0.001$). The current study also agrees with the finding of a study by Shakhshir and Alkaiyat (2023) on the knowledge and practice of HCWs on the quality of nutrition care in hospitals within developing countries. Investigations revealed a significant moderate positive correlation between the knowledge and practice scores of the respondents ($P < 0.001$). These findings also agreed with a study by Ahmed (2018) that reported that the performance of HCWs in maternal and child health centres was affected by their level of knowledge. This finding suggests that nurses with greater understanding of the nutritional component of the RtHB are more likely to apply knowledge correctly when providing care to children under the age of 5.

CHAPTER 6: CONCLUSION, RECOMMENDATIONS AND LIMITATIONS

6.1 INTRODUCTION

This chapter discusses the conclusion of the study based on the findings collectedfrom nurses in the PHC facilities of Mopani District in Greater Giyani, to describe the knowledge and nursing personnel practice on the use of the nutrition component of RtHB. Limitations that have affected the study and recommendations will also be discussed.

6.2 RECOMMENDATIONS

Based on the findings of the study, the following are recommendations that could be implemented to enhance how nurses use the RtHB:

The Department of Health should provide nurses with ongoing education and training sessions to improve their knowledge of nutrition guidelines. This practice could include workshops, advanced courses, or online courses that focus on the practical application of the use of the nutrition component of the RtHB.

The Mopani District Nutrition section should develop and distribute job aids, quick reference guides, or digital resources that nurses can easily access for guidance on nutrition practices. This process will help reinforce nurses' knowledge and support consistent implementation.

More studies should be conducted in other districts on the nurses' awareness of the use of the nutrition component of the RtHB.

6.3 LIMITATIONS OF THE STUDY

The study was self-funded,and, consequently, resulted in financial constraints.

The study is quantitative in nature, so a questionnaire was used that did not leave room for the participants to give reasons and/or explanations for their responses.

6.4 CONCLUSION

The findings of the current study revealed a moderate level of knowledge among the participants regarding their ability to accurately use the nutritional component. The study showed that nurses/HCWs with many years of experience were more knowledgeable than those with less experience. The nursing staff practices in general were also fair. In light of the significant difference between knowledge and

anthropometric measurements such as weight, height, MUAC and its interpretation, it became evident that the nurses' knowledge of the use of nutrition components was generally put into practice. The study found that nurses with nutrition and growth monitoring knowledge applied it more. These facilities could benefit from more training and refresher courses.This study underlines the need for primary healthcare nurses to continue professional development to improve knowledge and bridge theory and practise.

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Activity Plan for the Research Proposal

Activity	**Months**								
	April-June 2022	July – Sept 2022	Oct-Dec 2022	Jan – Mar 2023	April –May 2023	June –July 2023	Aug-Sept 2023	Oct-Nov 2023	Dec2023-Jan2024
Formulation of a topic, aim, and objectives									
Introduction and background									
Problem statement									
Literature view									
Research Methodology									
Research instrument									
Submission to supervisor									
Submission to Departmental									
Submission to SREC									
Submission to TREC									
collection of data									
Analysis of data									

BUDGET

Items	**Quantity**	**Price**
Stationery (pencils, pens, and rubber	12 each	R100.00

Transport during data collection and delivery of letters	350 km	R3000.00
Printing of questionnaire and consent forms	3000	R6000.00
Printing of letters	3	R20.00
Printing and binding of the final thesis	2	R1000.00
Airtime to coordinate the study	R50.00 Vodacom R50 other networks	R100.00
Total cost		**R10 220.00**

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ANNEXURE A: CONSENT FORM

Consent form for participants

I, _____ (participant name), understand that I am being asked to participate in a survey/questionnaire activity that forms part of Mashigo Ressie (student's) required coursework at the University of Limpopo Turfloop campus. It is my understanding that this survey/questionnaire has been designed to gather information on the following topics: knowledge and practices of nurses on use of the nutrition component of the road to health booklet by healthcare workers in Giyani primary health care facilities, Mopani district.

The purpose of the study: To describe the knowledge and practices of nurses on the use of the nutrition component of the Road to Health Booklet (RtHB) in Giyani health care facilities.

Some general information has been given about this research and the types of that questions I was expected to answer. I understand that my participation in this project is voluntary and that I am free to decline to participate, without consequence, at any time prior to or at any point during the activity. I understand that any information I provide will be kept confidential, used only for the purposes of completing this investigation, and will not be used in any way that can identify me. All questionnaire responses will be kept in a secure environment.

I also understand that there are no risks involved in participating in this activity.
I have read the information above. By signing the following and returning this form, I consent to participate in this questionnaire.

Participant name (please print): _____

Signature: _____

Date: _____

Student name: Mashigo R

Telephone number: 0798065196

Email address:ressiemashigo@ymail.com

Thank you for agreeing to participate in my project.

Title of the study: KNOWLEDGE AND PRACTICES OF NURSES ON THE USE OF NUTRITION COMPONENT OF ROAD TO HEALTH BOOKLET IN GIYANI PRIMARY HEALTH CARE FACILITIES, MOPANI DISTRICT.

Dear Participant,

1. Introduction

We invite you to participate in a research study. This information brochure will help you decide whether you want to participate in the study. Before agreeing to participate, you must fully understand what is involved. It will take almost 20 to 40 minutes to complete the interview. If you have any questions that this brochure does not fully explain, please do not hesitate to ask the investigator, Ms. Mashigo Ressie.

2. The nature and purpose of this research study

The main purpose of this research study is to describe the level of knowledge and practices on the use of the nutrition component of the Road to Health Booklet in Giyani health care facilities. You, as a participant, are a very important source of information on the use of RtHB.

3. Risk and discomfort

There are no risks involved in participating in this research study, and should you feel at any time during the interview that you no longer want to participate, you can withdraw.

4. Possible benefits of this research study

The information collected will help improve the use of RtHB in improving the nutritional status of children under the age of five years of age. Participants will gain knowledge about the proper use, plotting, interpretation, and classification of children in the Road to Health booklet. The information from this study can be used to improve the utilization of RtHB to identify children and refer children who need nutritional interventions in the Greater Giyani Subdistrict.

6. What are your rights as a participant?

Your participation in this study is entirely voluntary. You can refuse to participate or stop at any time during the interview without giving any reason. Your withdrawal will not affect you or any treatment at the clinic in any way.

7. Has the research study received ethical approval?

This research study received written approval from the Research Ethics Committee of the University of Limpopo and the Department of Health of the Province of Limpopo. Copies of the approval letters will be available if you wish to have one.

ANNEXURE B: LETTER TO REQUEST PERMISSION

To: The Provincial Department of Health (Research Committee).
Limpopo Province
Polokwane, 0699

From: Ms Mashigo R
MPH-Student UL (Turfloop campus)

Date:19 October 2023

Dear Sir/Madam

RE: Application for permission to conduct research in Greater Giyani clinics

My name is Mashigo Ressie (student number: [redacted], a registered Master of Public Health with the University of Limpopo, Turfloop campus, within the School of Health care Sciences. I wish to conduct a research project titled '**Knowledge and Practices of Nurses on the Use of the Nutrition Component of the Road to Health Booklet in Giyani Primary Health Care Facilities, Mopani District**'.

Therefore, I request your office to grant me permission to carry out this research project in Giyani clinics. A copy of my research proposal and letter of ethics approval are attached for your perusal.
My study supervisors are Mr. Makwela MS (Lecturer – Dietetics and Human Nutrition – University of Limpopo) and Dr. Mashamba TJ (Lecturer- Department of Public Health).

For more information, contact the researcher, Mashigo R @ cell: 079 806 5196/073 406 0277: Email address: mashigoressie@ymail.com.
We thank you in advance.

Yours sincerely

_____

Mashigo R

TO: The District Executive Manager
Department of Health
Mopani District

FROM: Ms Mashigo R
MPH-Student UL (Turfloop campus)

DATE: 19 October 2023

SUBJECT: REQUEST FOR PERMISSION TO COLLECT DATA FOR RESEARCH

Dear Manager

Re: Permission to conduct research in the Greater Giyani Primary Health care clinics

I Mashigo Ressie, student number [redacted], doing a Master of Public Health at the University of Limpopo, for me to complete the degree I must conduct research. Therefore, I request permission to collect data for my research project in the Greater Giyani Subdistrict (Giyani Local area). The data collection will take place from 06 November 2023 to 31 December 2023. The researcher will interview the nursing personnel at Giyani clinics local area in the local area.

The title of the study is Knowledge and Practices of Nurses on the Use of the Nutrition Component of the Road to Health Booklet in Primary Health care Facilities Giyani, Mopani District. The purpose of this study is to evaluate the knowledge and practices of the nursing staff regarding the use of the nutrition component of the HB in the local area Giyani clinics.

For more information, contact the researcher, Mashigo R @ cell: 079 806 5196/073 406 0277: Email address: mashigoressie@ymail.com.

We hope for a positive response in this regard.

Ms Mashigo R

_____

TO: The Clinic Operatioanl Manager
Giyani local area clinic

FROM: Ms Mashigo R
MPH-Student UL (Turfloop campus)

DATE: 19 October 2023

SUBJECT: REQUEST FOR PERMISSION TO COLLECT DATA FOR RESEARCH

Dear Clinic Operations Manager

Re: Permission to conduct research in Giyani local area clinics

I Mashigo Ressie, student number [redacted], doing a Master of Public Health at the University of Limpopo, for me to complete the degree I must conduct research. Therefore, I request permission to collect data for my research project at your facility. The data collection will take place from 06 November 2023 to 31 December 2023. The researcher will interview the nursing staff at the clinic.

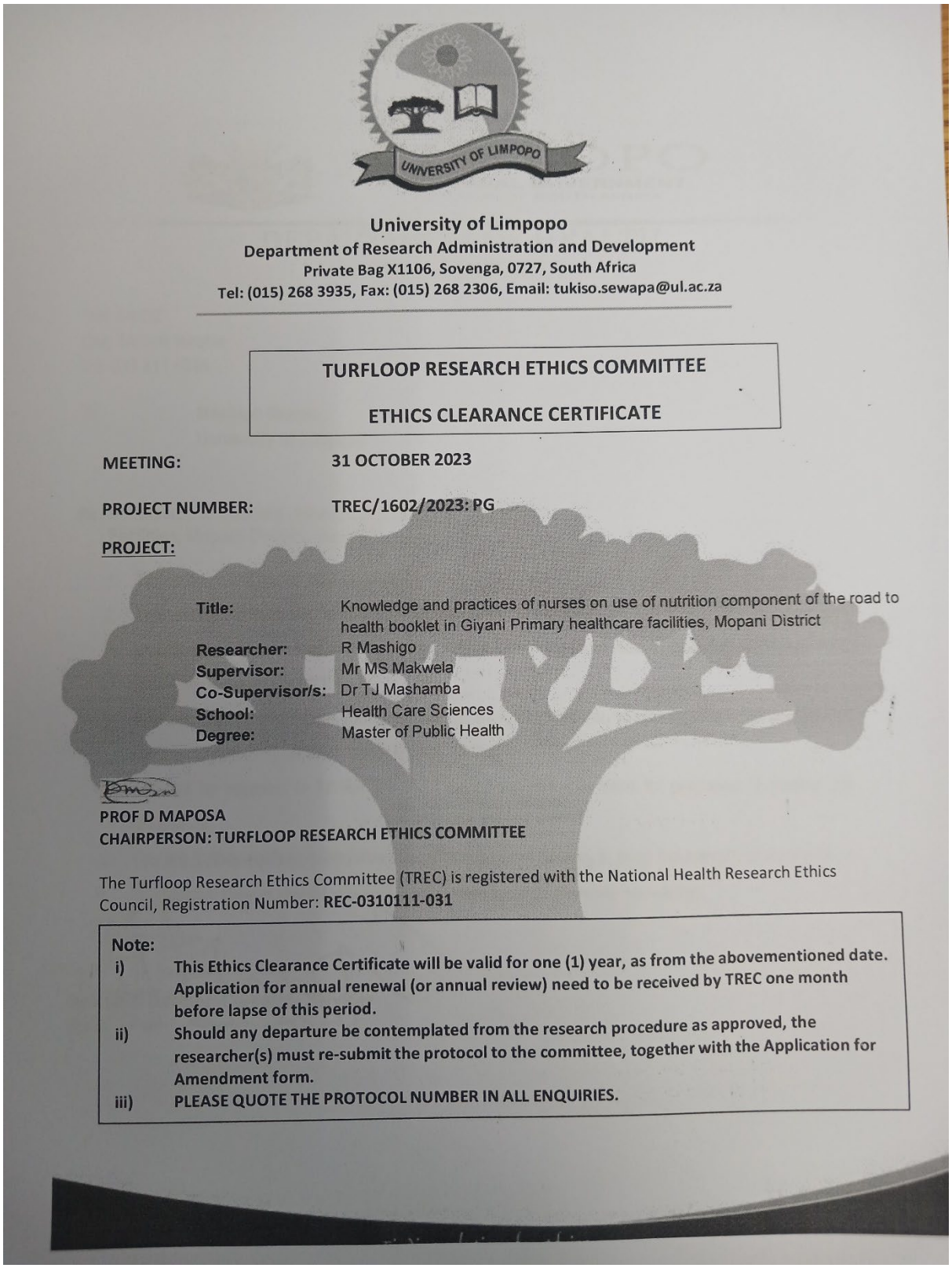
The title of the study is 'Knowledge and Practices of Nurses on the Use of the Nutrition Component of the Road to Health Booklet in Giyani Primary Healthcare Facilities, Mopani District'. The purpose of this study is to evaluate the knowledge and practices of the nursing staff regarding the use of the nutrition component of the RtHB in the local area of Giyani primary healthcare facilities.

Hoping for a positive response in this regard.

Ms Mashigo R

_____

ANNEXTURE C: ETHICAL CLEARANCE CERTIFICATE



University of Limpopo
Department of Research Administration and Development
Private Bag X1106, Sovenga, 0727, South Africa
Tel: (015) 268 3935, Fax: (015) 268 2306, Email: tukiso.sewapa@ul.ac.za

TURFLOOP RESEARCH ETHICS COMMITTEE

ETHICS CLEARANCE CERTIFICATE

MEETING: 31 OCTOBER 2023

PROJECT NUMBER: TREC/1602/2023: PG

PROJECT:

Title:	Knowledge and practices of nurses on use of nutrition component of the road to health booklet in Giyani Primary healthcare facilities, Mopani District
Researcher:	R Mashigo
Supervisor:	Mr MS Makwela
Co-Supervisor/s:	Dr TJ Mashamba
School:	Health Care Sciences
Degree:	Master of Public Health

PROF D MAPOSA
CHAIRPERSON: TURFLOOP RESEARCH ETHICS COMMITTEE

The Turfloop Research Ethics Committee (TREC) is registered with the National Health Research Ethics Council, Registration Number: **REC-0310111-031**

Note:

i) **This Ethics Clearance Certificate will be valid for one (1) year, as from the abovementioned date. Application for annual renewal (or annual review) need to be received by TREC one month before lapse of this period.**

ii) **Should any departure be contemplated from the research procedure as approved, the researcher(s) must re-submit the protocol to the committee, together with the Application for Amendment form.**

iii) **PLEASE QUOTE THE PROTOCOL NUMBER IN ALL ENQUIRIES.**

ANNUXTURE D: DEPARTMENTAL APPROVAL

LIMPOPO
PROVINCIAL GOVERNMENT
REPUBLIC OF SOUTH AFRICA

DEPARTMENT OF
HEALTH

Ref : LP_2023-12-014
Enquires : Legodi P
Tel : 015-293 6028/6410
Email : Malesela.Legodi@dhsd.limpopo.gov.za

MASHIGO RESSIE

PERMISSION TO CONDUCT RESEARCH IN DEPARTMENTAL FACILITIES

Your Study Topic as indicated below;

KNOWLEDGE AND PRACTICES OF NURSES ON USE OF NUTRITION COMPONENT OF THE ROAD TO HEALTH BOOKLET IN GIYANI PRIMARY HEALTHCARE FACILITIES, MOPANI DISTRICT.

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

Your cooperation will be highly appreciated.

Head of Department

5/2/2024
Date

pp

Private Bag X9302, Polokwane 0700
Fidel Castro Ruz House, 18 College Street, Polokwane 0700
Tel: 015 293 6000. Fax: 015 293 6211. Website: www.doh.limpopo.gov.za

ANNEXTURE E: MOPANI DISTRICT APPROVAL LETTER

LIMPOPO
PROVINCIAL GOVERNMENT
REPUBLIC OF SOUTH AFRICA

DEPARTMENT OF HEALTH
MOPANI DISTRICT

Ref: S4/2/2
Enq: Mohatli Isiraele
Tel: 015 811 6644

To **Mashigo Ressie**
University of Limpopo

Re: Permission to conduct research at Greater Giyani PHC Facilities, Mopani District: Yourself

1. The matter cited above bears reference
2. This serves to respond to the request submitted to research on the topic: **"Knowledge and practices on the use of nutrition component of the road to health booklet in Giyani PHC facilities, Mopani District"**
3. It is with pleasure to inform you about the decision to permit you to conduct the cited research at Greater Giyani PHC facilities within Mopani District.
4. You will be required to furnish the PHC authorities with this letter for purposes of access and assistance.
5. You are further advised to observe ethical standards necessary to keep the integrity of the facilities.
6. The Mopani District wishes you well in your endeavour to generate knowledge.

Assistant Director: Corporate Services
Date: 22.02.2024

ANNEXURE F: LANGUAGE EDITING CERTIFICATE

DECLARATION OF LANGUAGE EDITING

A mini-dissertation submitted in partial fulfillment of the requirements for the degree

Master of Public Health

In the Department of Public Health

(School of Health Sciences)

at the

UNIVERSITY OF LIMPOPO

entitled

KNOWLEDGE AND PRACTICES OF NURSES ON USE OF NUTRITION COMPONENT OF THE ROAD TO HEALTH BOOKLET IN GIYANI PRIMARY HEALTH CARE FACILITIES, MOPANI DISTRICT

By

MASHIGO RESSIE: [redacted]

Supervisor: Mr Makwela MS

Co-Supervisor: Dr Mashamba TJ

has been subjected to an English language edit by

Dr Barbara Basel

(The edits still have to be checked and implemented by the student.)

D.Litt. University of Pretoria,
MA Potchefstroom University,
BA UNISA
Vice President of the Council of English Academy of Southern Africa
Associate Member Professional Editors' Guild
Past Lecturer in English Literature, Linguistics, Communication and Business English for 10 years at Pearson Institute for Higher Education (previously Midrand Graduate Institute), Cape Town Campus.
Academic Editing – PhD, MA, MBA, MCom, MEd, MPM proposals, theses and journal articles in a wide range of disciplines.

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Barbara Basel

30 August 2024

ANNEXURE G: QUESTIONNAIRE (ENGLISH)

Topic: Knowledge and practices of nurses about the use of the nutrition component of the Road to Health brochure in primary health care facilities of Giyani, Mopani district.

INSTRUCTIONS

- I would like to thank you for agreeing to participate in this study. The information you will provide will remain confidential.
- Please note that there is no right or wrong answer.
- Please tick your answer with a cross.
- If you do not understand a question, ask me to clarify it for you.

Date of interview:

Participant code:

SECTION A: DEMOGRAPHIC INFORMATION

1. Name of the clinic in the local area of Giyani:
2. Location of the clinic

Urban		1
Rural		2

3. Age

19 to 25		1
25 to 30		2
30 to 40		3
40 to 50		4
Above 50		5

4. Sex

Male		1
Female		2
Other		3

5. Category of nursing personnel

Enrolled nursing assistant		1
Staff nurse		2
Professional nurse		3

6. Other, specify

……

……

……

7. How long have you been working?

1-3 years		1
4-6 years		2
7-10 years		3
More than 10 years		4

8. How long have you been working in the child health section of the clinic?

1-3 years		1
4-7 years		2
7-10 years		3
More than 10 years		4

8. Where did you receive training on the Road to Health booklet?

Nursing college		1
University while studying		2
Department of health workshops		3
At clinic by Dietician/Nutritionist		4
At clinic by a colleague		5
Never trained		6

9. When did your last training on RtHB took place?

Between 2011 and 2014		1
Between 2015 and 2017		2
Between 2018 and 2021		3
Between 2021 and 2023		4

10. What aspects were covered during training? List more than two.

Plot points for growth indicators		1
Interpreting growth indicators		2
Identify growth problems from plotted points		3
Procedures of taking measurements		4
Immunisation		5
Others		6

11. Where do you receive refresher training on the use of the Road to Health brochure?

District office workshops		1
Provincial office workshops		2
Clinic by Dietician and Nutritionist		3
From NGO's		4
others		5

12. When did you receive a refresher training on RtHB?

Five years back		1
Two back		2
1 year back		3
Within six months		4

Part B: Knowledge of the nursing personnel practice on the use of the nutrition component of RtHB

Questions	Possible answers to choose from	
13. What is growth monitoring and promotion?	Health promotion, assessment of growth and development	1
	Immunization	2
	Screening for health problems and referral	3
	Measuring of the child at regular intervals, plotting weight/height on a graph allowing one to see growth changes and advise the mother	4
	All of the previously mentioned points	5
14. How often should an infant/young child's growth be monitored?	Every month until two years	1
	When the child must receive immunization	2
	Every month until five years	3
	From one year every month, then every two months until two years and every six months thereafter	4
	until a child complete immunization on	5
15. A child should be weighed with minimal clothes (vest etc.) if…	Less than1 year	1
	Above 1 year	2
	Between 1 year to 5 years	3
	From birth until five years	4
16.A child whose weight for age is below -2 lines indicates	Wasted	1
	Stunted	2
	Underweight	3
	Normal	4
	Severe wasting	5
17.A child whose weight for age is below -3 lines	Wasted	1
	Severe wasting	2
	Stunted	3
	Severely underweight	4
	Normal	5

16. A child whose Height for age is below -2 lines chart indicates	Wasted	1
	Stunted	2
	Underweight	3
	Normal growth	4
	Severe stunting	5
17. A child whose height for age is below -3 lines	Stunted	1
	Severe stunting	2
	Underweight	3
	Wasted	4
	Normal growth	5
18. A child whose weight for height is below -2 lines indicates	Underweight	1
	Wasted	2
	Stunted	3
	Underweight	4
	Severely wasted	5
19. A child whose weight for height is below -3 lines indicates	Wasted	1
	Severely wasted	2
	Stunting	3
	Underweight	4
	Overweight	5
21. A child whose weight for height is above +2 lines indicates	Wasted	1
	Severely wasted	2
	overweight	3
	Stunting	4
	underweight	5
22. MUAC less than 11,5 cm indicates	Moderate acute malnutrition	1
	No acute malnutrition	2
	Severe acute malnutrition	3
	Normal growth	4
	I don't know	5
	Moderate acute malnutrition	1
	No acute malnutrition	2

23. MUAC between 11.5 cm and 12,5 cm indicates	Severe acute malnutrition	3
	Normal growth	4
	I don't know	5
24. MUAC above 12,5 cm indicates	Moderate acute malnutrition	1
	No acute malnutrition	2
	Severe acute malnutrition	3
	Normal growth	4
	I don't know	5
25. A child may be referred if the MUAC or the weight-for-age measurement classifies the child as	Moderate acute malnutrition	1
	No acute malnutrition	2
	Severe acute malnutrition	3
	Normal growth	4
	I don't know	5
26. What do you mean by the word exclusive breastfeeding?	Giving the child only breast milk without other foods, self-medication and water	1
	Giving the breast milk and other food before six months	2
	Giving breast milk, formula milk and soft porridge before six months	3
	Giving soft porridge and water before six months	4
	The transition from breastfeeding to family foods	5
27. What do you understand by the complementary feeding	The transition from breastfeeding to family foods	1
	Giving the breast milk and other food before six months	2
	Giving breast milk, formula milk and soft porridge before six months	3
	Giving soft porridge and water before six months	4
	All of the above	5
	From six months	1

28. At what age should children receive vitamin A capsules?	From one year	2
	From eighteen months	3
	From two years	4
	At five years	5
29. At what age should children receive deworming tablets?	From one year	1
	From eighteen months	2
	From two years	3
	At five years	4
	From birth	5

Section C: Practices of nursing personnel practice on the use of the nutrition component of the RtHB

30. What type of equipment do you use in child health services?

For height?

Stadio meter/ high rod		1
Length board		2
Tape measure		3
other		4

For weight:

Hanging scale		1
Beam balance scale		2
Digital scale		3
other		4

MUAC:

MUAC tape(colour coded)		1
Normal tape		2
other		3

Head circumference:

Head circumference measuring tape		1
Normal tape measure		2
Other		3

31. Do you usually use RtHB during child health services?

Yes		1
No		2

32. How often do you measure the weight and interpret it?

Every month		1
Every visit		2
Every three month		3
Every six month		4

33. How often do you take height and interpret it?

Every month		1
Every visit		2
Every three month		3
Every six month		4

34. At which intervals do you take MUAC and interpret it?

At birth, then every visit		1
At three months, then every visit		2
At six months, then every visit		3
Once every year		4

35. When do you measure the head circumference?

At 14 weeks and 1 year		1
At 10 weeks and 1 year		2
At 6 weeks and 1 years		3
At birth		4

36. What type of nutritional counseling do you give to mothers/caregivers of children under the age of 6 months?

Breastfeeding		1
Complementary feeding		2
Growth monitoring		3
Vitamin and Deworming		4

37. If the mother has breastfeeding problems, how do you deal with it?

Advice mother to formula feed and use the feeding cup		1
Continue with breastfeeding		2
Breastfeeding and formula feeding		3
Give complementary foods		4
Do not know		5

37. What type of nutritional counseling do you usually give to mothers/caregivers with children from 6 months to 1 year?

Breastfeeding		1
Complementary feeding		2
Growth monitoring		3
Vitamin A and Deworming		4

38. What types of feeding messages do you usually send to mothers /caregivers with children from 6 to 8 months?

Breast milk and other family food		1

Food should providing Sufficient energy, protein, and micronutrients to meet the nutritional needs of a growing child		2
Soft porridge only		3
Feeding anything that is available in the family		4

39. How much should these foods be given to children from 6 to 8 months per feeding at a time?

1 - 2 teaspoons of food and gradually increase the amount and frequency		1
3 – 5 teaspoons of food and gradually increase the amount and frequency		2
6 – 10 teaspoons of food and gradually increase the amount and frequency		3
½ cup of food and gradually increase the amount and frequency		4

40. How often should these foods be given to children from 6 to 8 months a day?

Twice per day		1
Four times per day		2
Six times per day		3
Any time		4

41. What types of feeding messages do you normally send to mothers / caregivers with children aged 9 to 11 months?

Breast milk and soft porridge		1
Food should providing Sufficient energy, protein, and micronutrients to meet nutritional needs of a growing child's		2
Soft porridge only		3

Feeding anything that is available in the family		4

42. How much should these foods be given to children from 9 to 11 months of age?

1 - 2 teaspoons of food and gradually increase the amount and frequency		1
3 – 5 teaspoons of food and gradually increase the amount and frequency		2
6 – 10 teaspoons of food and gradually increase the amount and frequency		3
1/4 cup of food and gradually increase the amount and frequency		4

43. How often should these foods be given to children from 9 to 11 months a day?

Twice per day		1
Four times per day		2
Five times per day		3
Six times time		4

44. What message or advice do you have for mother/caregivers whose children experience diarrhoea and vomiting?

Breastfeeding on demand		1
Advice on give them a Sugar Salt Solution (SSS) to drink after each stool.		2
Advice on feeding small frequent meals		3
Advice on breastfeeding and feeding small frequent meals		4
Advice on feeding family foods		5

45. What message do you send to mothers / caregivers on immunization?

Follow the immunization schedule or routine on RTHB		1

To bring their children every month at the facility		2
Visit facility when the child is sick for immunization		3
Do not know		4

46. Which conditions lead you to refer a child under 6 months of age to other healthcare workers? Tick two options.

Not breastfeeding well		1
Not gaining well		2
Flatten curve		3
When the child is sick		4
Do not know		5

47. Which condition requires you to refer a child over 6 months of age to other healthcare workers?

Not breastfeeding well		1
Not gaining well		2
Flatten curve		3
When the child is sick		4

ANNEURE H: XITSONGA VERSION

Nhlokomhaka: Ku tirhisiwa ka xiphemu xa swakudya swa xibukwana xa patu ro ya eka rihanyo hi vatirhi va nhlayiso wa rihanyo eka tindhawu ta nhlayiso wa rihanyo wa le henhla wa Giyani, xifundzankulu xa Mopani.

Swiletelo:

- Ndzi rhandza khensa ku va mi pfumerile ku nghenelela eka vulavisis lebyi. Rungula leri u nga ta ri nyika ri ta tshama ri ri xihundla.
- Hi kombela mi xiya leswaku a ku na nhlamulo leyinene kumbe leyi hoxeke.
- Hi kombela u hlawula nhlamula ya wena hi ku veka xihambano.
- Loko u nga twisisi xivutiso, ndzi kombela leswaku ndzi ku hlamusela.

Siku ra mbulavirisano:

Xiyenge A: voxokoxoko bya nhlayo ya vaaki.

1. Vito ra tliliniki ehansi ka Giyani local area:
2. Malembe

19 ku ya ka 25 wa malembe		1
25 ku ya ka 30 wa malembe		2
30 ku ya ka 40 wa malembe		3
40 ku ya ka 50 wa malembe		4
Ku tlula malembe ya 50		5

3. Rimbewu

Xinuna		1
Xisati		2

Xin’wana		3

4. Xiyenge xa vuongori

Nursing Assistant		1
Staff Nurse		2
Professional nurse		3

5. Swin’wana, boxa

……

……

……

6. U tirhe nkarhi wo tanihi kwihi?

Lembe rin’we ku fika ka manharhu		1
Malembe ya mune ku fika ka ya tsevu		2
Malembe ya nkombo ku fika ka ya khume		3
Ku hundza malembe ya khume		4

7. I nkarhi wo tanihi kwihi u tirha eka Xiyenge xa rihanyo ra vana xa kliniki?

Lembe rin’we ku fika ka manharhu		1
Malembe ya mune ku fika ka ya tsevu		2
Malembe ya nkombo ku fika ka ya khume		3
Ku hundza malembe ya khume		4

8. U kume kwihi ndzetelo eka xibukwana xa ndlela yo ya eka rihanyo?

A xikolweni xa vuongori		1
A university		2

Eka tiwekhixopo ta ndzawulo ya rihanyo		3
A kliniki hi mutivi wa swakudya		4
A kliniki hi mutirhi kuloni		5
A ndzi si tshama ni leteriwa		6

9. U kume rini ndzetelo wo hetelela eka xibukwana xa pato ya rihanyu?

Exikarhi ka 2011 na 2014		1
Exikarhi ka 2015 na 2017		2
Exikarhi ka 2018 na 2021		3
Exikarhi ka 2021 na 2023		4

10. Hi swihi swiyenge leswi katsiweke hi nkarhi wa ndzetelo? Xaxameta ku tlula tinhlamulo timbirhi?

Tinhla to plot ta swikombiso swa ku kula		1
Ku hlamusela swikombisoswa ku kula		2
Kuma swiphiqo swa ku kula ku suka eka tinhla leti plotiweke		3
Maendlelo yo teka mimpimo		4
Sivela mavabyi		5
Swin'wana		6

11. Xana u kuma kwihi ndzetelo wo pfuxeta mayelana na ku tirhisiwa ka Xibukwana xa Ndlela yo ya eka Rihanyo?

Tiwekhixopo ta tihofisi ta muganga		1
Tiwekhixopo ta tihofisi ta xifundzankulu		2
Tliliniki hi Mutivi wa Swakudya		3
Ku suka eka ti NGO's		4

Swin'wana		5

12. Xana u kume rini ndzetelo wo pfuxeta eka RtHB?

Malembe ya ntlhanu e ndzaku		1
Malembe ma mbirhi a ndzaku		2
Lembe rin'we a ndzaku		3
Ku nga si hela tin'hweti ta tsevu		4

Xiyenge xa B: Vutivi bya vatirhi va nhlayiso wa rihanyo eka ku tirhisiwa ka xiphemu xa swakudya swa RtHB

Swivutiso	Ku kamberiwa ka swiphiqo swa rihanyo na ku rhumeriwa	
13. Xana ku vekiwa tihlo ka ku kula na ku tlakusa i yini?	Xana ku vekiwa tihlo ka ku kula na ku tlakusa i yini?	1
	Nsawutiso wa vana	2
	Ku kamberiwa ka swiphiqo swa rihanyo na ku rhumeriwa	3
	Ku pima n'wana hi nkarhi na nkarhi, ku plota ntiko / ku leha eka girafu leswi endlaka leswaku munhu a kota ku vona ku cinca ka ku kula na ku tsundzuxa manana	4
	Tinhla hinkwato leti nga laha henhla	5
14. Xana ku kula ka ricece / n'wana lontsongo ku fanele ku vekiwa tihlo kangani?	N'weti yin'wana na yin'wana ku fikela loko n'wana a fikisa malembe mambirhi tsena.	1
	Loko n'wana a fanele ku kuma ntlhavelo	2
	N'weti yin'wana ni yin'wana ku fikela eka malembe ya ntlhanu	3
	Ku sukela eka lembe rin'we kutani endzhaku ka tin'hweti tin'wana ni tin'wana timbirhi ku fikela eka malembe mambirhi ni tin'hweti tin'wana ni tin'wana ta tsevu endzhaku ka sweswo	4
	Ku kondza n'wana a heta ntlhavelo	5

15. N'wana u fanele ku pimiwa hi swiambalo leswitsongo (xikipa kumbe swiambalo swo vevuka) loko...	Loko a ri ehansi ka lembe	1
	A ri na lembe ku ya henhla	2
	Exikarhi ka lembe na malembe ya ntlhanu	3
	Loko a ha ku beburiwa hu fika ka malembe ya ntlhanu	4
	Tinhla hinkwato leti nga laha henhla	5
16. N'wana loyi ntiko wa yena hi malembe wu nga ehansi ka -2 wa milayeni ya kombisa	Ku lala kumbe ku ondza	1
	Ku koma	2
	Ku tika ka le hansi	3
	Ntiko wa Kahle	4
	Ku lala kumbe ku ondza swinene	5
17.N'wana loyi ntiko hi malembe ya yena wu nga ehansi ka -3 wa milayeni	Ku lala kumbe ku ondza	1
	Ku lala kumbe ku ondza swinene	2
	Ku koma	3
	Ku tika ka le hansi	4
	Ntiko wa kahle	5
18. N'wana loyi ku leha ka yena ku nga ehansi ka -3 wa milayeni wo kombisa	Ku koma	1
	Ku koma swinene	2
	Ku tika ka le hansi	3
	Ku lala kumbe ku ondza	4
	Ku kula kahle	5
19. N'wana loyi ntiko wa yena hi ku leha wu nga ehansi ka milayeni ya -2 wo kombisa	Ku tika kale hansi	1
	Ku lala kumbe ku ondza	2
	Ku koma	3
	ku koma swinene	4
	Ku ondza kumbe ku lala swinene	5
20. N'wana loyi ntiko wa yena hi ku leha wu nga ehansi ka milayeni ya -3 wa kombisa	Ku lala kumbe ku ondza	1
	Ku lala kumbe ku ondza swinene	2
	Ku koma	3
	Ntiko wa le hansi	4
	Ntiko wa le henhla	5
	Ku lala kumbe ku ondza	1

21. N’wana loyi ntiko wa yena hi ku leha(weight for height) wu nga ehenhla ka milayeni ya 2 wa kombisa	Ku lala kumbe ku ondza swinene	2
	Ntiko wa le henhla	3
	Ku koma	4
	Ntiko wa le hansi	5
22. MUAC yale hansi ka 11,5 cm swikomba	Ku pfumaleka ka swakudya leswi ringaneleke hi xihatla	1
	Ku hava ku pfumaleka ka swakudya leswi ringaneleke lokukulu	2
	Ku pfumaleka ka swakudya leswi ringaneke lokukulu	3
	Ntiko wa kahle	4
	A ndzi tivi	5
23. MUAC exikarhi ka 11.5 cm na 12,5 cm yi kombisa	Ku pfumaleka ka swakudya leswi ringaneleke hi xihatla	1
	Ku hava ku pfumaleka ka swakudya leswi ringaneleke	2
	Ku pfumaleka ka swakudya loko ringaneleke lokukulu	3
	Ku kula loko tolovelekeke	4
	A ndzi tivi	5
24. MUAC yale henhla ka 12,5 cm yi kombisa	Ku pfumaleka ka swakudya leswi ringaneleke hi xihatla	1
	Ku hava ku pfumaleka ka swakudya leswi ringaneleke	2
	Ku pfumaleka ka swakudya loko ringaneleke lokukulu	3
	Ku kula loko tolovelekeke	4
	A ndzi tivi	5
25. N'wana a nga ha rhumeriwa loko kumbe MUAC kumbe mpimo wa ntiko hi malembe wu hlawula n'wana tanihi	Ku pfumaleka ka swakudya leswi ringaneleke hi xihatla	1
	Ku hava ku pfumaleka ka swakudya leswi ringaneleke	2

	Ku pfumaleka ka swakudya loko ringaneleke lokukulu	3
	Ku kula loko tolovelekeke	4
	A ndzi tivi	5
26. Xana u twisisa yini hi rito ku mamisa tsena	Ku nyika n'wana masi ya mavele ntsena handle ka swakudya swin'wana, ku titshungula na mati	1
	Ku nyika masi ya mavele na swakudya swin'wana emahlweni ka tin'hweti ta tsevu	2
	Ku nyika masi ya mavele, masi ya formula na mapa yo olova loko n'wana a nga se va na tsevu wa tin'hweti	3
	Ku nyika mapa yo olova na mati loko ku nga se fika tsevu wa tin'hweti	4
	Ku cinca ku suka eka ku mamisa ku ya eka swakudya swa ndyangu	5
27. Xana u twisisa yini hi ku phameriwa loku tatiselaka	Ku cinca ku suka eka ku mamisa ku ya eka swakudya swa ndyangu	1
	Ku nyika masi ya mavele na swakudya swin'wana emahlweni ka tinhweti ta tsevu	2
	Ku nyika masi ya mavele, masi ya formula na mapa yo olova loko ku nga se va na tsevu wa tinhweti	3
	Ku nyika mapa yo olova na mati loko kungase fika tsevu wa tin'hweti	4
	Hinkwaswo leswi nga laha henhla	5
28. Xana vana va fanele ku kuma tikhepsulu ta Vitamin A va ri na malembe mangani?	Ku sukela eka tin'hweti ta tsevu	1
	Ku sukela eka lembe	2
	Ku sukela ka khume-nhungu	3
	Ku sukela ka lembe mambirhi	4
	Eka ntlhanu wa malembe	5
	Ku sukela eka lembe	1
	Ku sukela ka khume-nhungu	2

29. Xana vana va fanele ku kuma tiphilisi ta Deworming va ri na malembe mangani?	Ku sukela ka lembe mambirhi	3
	Eka ntlhanu wa malembe	4
	Loko n'wana a ha ku beburiwa	5

XIYENGE XA C: Maendlelo ya vatirhi va nhlayiso wa rihanyo eka ku tirhisiwa ka RTHB

30. Xana u tirhisa swi tirhisiwa swa muxaka muni eka vukorhokeri bya rihanyo ra vana?

Ku pima ku leha

Stadio meter/ high rod		1
Length board		2
Tape measure		3
other		4

31. ku pima ntiko

Hanging scale		1
Beam balance scale		2
Digital scale		3
other		4

MUAC:

MUAC tape(colour coded)		1
Normal tape		2
other		3

Head circumference:

Head circumference measuring tape		1

Normal tape measure		2
Other		3

32. Xana hi ntolovelo u tirhisa RtHB hi nkarhi wa vukorhokeri bya rihanyo ra vana?

Ina		1
Ee		2

33. Xana u pima ntiko kangani u tlhela u wu hlamusela?

N'hweti yin'wana ni yin'wana		1
Ku endzela ku n'wana ni ku n'wana		2
Eka tin'hweti tinharhu tin'wana na tin'wana		3
Tin'hweti tin'wana ni tin'wana ta tsevu		4

34. Xana u pima ku leha kangani u tlhela u wu hlamusela?

N'hweti yin'wana ni yin'wana		1
Ku endzela ku n'wana ni ku n'wana		2
Eka tin'hweti tinharhu tin'wana na tin'wana		3
Tin'hweti tin'wana ni tin'wana ta tsevu		4

35. Xana u teka MUAC u yi hlamusela hi minkarhi yihi?

Loko n'wana a ha ku beburiwa		1
Loko ari na ti n'weti ti nharhu		2

Ku sukela ka ti N’hweti ta tsevu, ku teni xi kalo Xin'wana na xin'wana		3
Ka n’we elembeni		4

36. U pima rini ku rhendzeleka ka hloko?

Eka mavhiki ya khume-mune na lembe		1
Eka mavhiki ya khume na lembe		2
Eka mavhiki ya tsevu na lembe		3
Loko a ha ku velekiwa		4

37. I muxaka wi hi wa vutsundzuxi bya swakudya lebyi u byi nyikaka vamanana/vahlayisi lava nga na vana lava nga ehansi ka tinhweti ta tsevu?

Ku mamisa		1
Ku phameriwa loku tatiselaka		2
Ku vekiwa tihlo ka ku kula		3
Vitamin A na murhi wa manyokana		4

38. Loko manana a hlangana na swiphiqo swa ku mamisa, xana u langutana na swona njhani?

Tsundzuxa mhani ku tirhisa masi ya tini a nyika hi capu		1
Ku ya malweni a mamisa		2
Ku mamisa no nyika masi ya tini		3
Ku nyika swakudya swo tatisela		4
A ni swi tivi		5

39. I muxaka wihi wa vutsundzuxi bya swakudya leswi hi ntolovelo u wu nyikaka ka vamanana/vahlayisi va vana lava nga na tin’hweti ta tsevu ku ka lembe rin'we?

Ku mamisa		1

Ku nyika swakudya swo tatisela		2
Ku vekiwa tihlo ka ku kula		3
Vitamin A na murhi wa manyokana		4

40. I muxaka wihi wa vutsundzuxi wa swakudya leswi hi ntolovelo u wu nyikaka ka vamanana/vahlayisi va vana lava nga na tin'hweti ta tsevu ku ya ka nhungu?

Ku mamisa na swakudya swa ndyangu		1
Swakudya swi fanele ku nyika matimba lama eneleke, ti protein micronutrients ku fikelela swilaveko swa swakudya swa n'wana loyi a kulaka.		2
Mukhapu ntsena		3
Swakudya swin'wana na swin'wana leswi nga kona a kaya		4

41. Xana swakudya leswi swi fanele ku nyikiwa vana ku suka eka tin'hweti ta tsevu ku ya eka tsevu I swakudya swingani hi nkarhi wun'we?

Xilepulana xin'we ku ya ka swimbirhi swi ka swi ngeteleriwa hi nkarhi		1
Xilepulana swi nharhu ku ya ka ntlhanu swi ka swi ngeteleriwa hi nkarhi		2
Xilepulana swa tsevu ku ya ka khume swi ka swi ngeteleriwa hi nkarhi		3
Hafu ya khapu ya swakudya na swona hakatsongo-tsongo u engetela mpimo ni ku tala		4

42. I kangani swakudya leswi swi fanele ku nyikiwa vana ku sukela eka tin'hweti ta tsevu ku ya eka nhungu hi siku?

Ka mbirhi hi siku		1

Ka mune hi siku		2
Ka tsevu hi siku		3
Nkarhi wo n'wana na wu n'wana		4

43. I muxaka wihi wa vutsundzuxi wa swakudya leswi hi ntolovelo u wu nyikaka ka vamanana/vahlayisi va vana lava nga na nkaye ku fika ka tin'hweti khume n'we?

Ku mamisa no nyika swakudya so olova		1
Swakudya swi fanele ku nyika matimba lama eneleke, ti protein micronutrients ku fikelela swilaveko swa swakudya swa n'wana loyi a kulaka.		2
Mukhapu ntsena		3
Swakudya swin'wana na swin'wana leswi nga kona a kaya		4

44. I mpimo wo tani hi kwihi lowu faneleke ku nyikiwa vana la nga malembe ya nkaye ku fika ka khume-n'we?

Xilepulana xin'we ku ya ka swimbirhi swi ka swi ngeteleriwa hi nkarhi		1
Xilepulana swi nharhu ku ya ka ntlhanu swi ka swi ngeteleriwa hi nkarhi		2
Xilepulana swa tsevu ku ya ka khume swi ka swi ngeteleriwa hi nkarhi		3
Hafu ya khapu ya swakudya na swona hakatsongo-tsongo u engetela mpimo ni ku tala		4

45. I kangani swakudya leswi swi fanele ku nyikiwa vana ku sukela eka tin'hweti ta nkaye ku ya eka khume-n'we hi siku?

Ka mbirhi hi siku		1

Ka mune hi siku		2
Ka tsevu hi siku		3
Nkarhi wu n'wana na wu n'wana		4

46. Hi ri hi rungula kumbe xitsundzuxo lexi u xi nyikaka vamanana / vahlayisi lava vana va vona va hlanganaka na ku hlanta na ku culuka?

Ku mamisa hi ku landza swilaveko		1
Xi tsundzuxa xo nyika diripi		2
Switsundzuxo swa ku phamela swakudya leswi tsongo		3
Switsundzuxo swo mamisa no nyika swakudya		4
Switsundzuxo swo nyika swakudya swa le kaya		5

47. Hi rihi hungu leri u ri nyikaka eka vamanana/vahlayisi eka ntlhavelo?

Ku landzelela nongonoko wa ntlhavelo		1
Ku tisa vana e xikalwini N'hweti yin'wana na yin'wana		2
Ku siya n'wana a kliniki loko a nga pfukanga		3
A ndzi tivi		4

48. Hi swihi swiyimo leswi ku susumetelaka ku hundzisela n'wana loyi a nga ehansi ka tin'hweti ta tsevu eka vatirhi van'wana va nhlayiso wa rihanyo? Hlawula ti hlamulo timbirhi.

Ku nga mamisi kahle		1
Ku nga engeteleki miri		2
Flatten curve		3
Loko n'wana a nga pfukangi		4
A ndzi tivi		5

49. Hi swihi swiyimo leswi ku susumetelaka ku hundzisela n'wana loyi a nga henhla ka tin'hweti ta tsevu eka vatirhi van'wana va nhlayiso?

Ku nga mami kahle Ku nga engeteleki miri		1
Flatten curve		2
Loko n’wana a nga pfukangi		3
A ni swi tivi		4