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Menu availability, food handling practices and nutrition knowledge of food handlers in the Early Childhood Development centres at Elias Motsoaledi Local Municipality, Limpopo Province

by

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This dissertation is submitted in partial fulfilment of the requirements for the degree of Master of Science in Nutrition in the Department of Nutrition in the Faculty of Health Science, University of Venda, South Africa

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May, 2025

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DEDICATION

I would like to dedicate this dissertation to my son, Vhutali, and my mother, Sylvia, I am deeply grateful for your constant support and encouragement that has played a crucial role in my research journey. I also want to thank my siblings and my sister's children for their unwavering motivation and backing. Your contributions have meant a lot to me.

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DECLARATION

I, **Mphagi Thabelo Winnie (STUDENT NO. 11591529),** hereby declare that the dissertation for the Master of Sciences in Nutrition degree at the University of Venda, hereby submitted by me, has not previously been submitted for a degree at this or any other university and that it is my own work in design and execution and that all reference material contained therein has been duly acknowledged.



05 May 2025

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Signature **Date**

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ACKNOWLEDGEMENT

Primarily, I would like to thank the Almighty God, for with Him, nothing is impossible. I am deeply grateful to my supervisors, Prof. LF Mushaphi and Mr R.C. Chauke. Your support, patience, guidance, and encouragement have been invaluable, and I am thankful for your belief in me throughout this journey. I have learned so much from both of you and feel fortunate to have had such exceptional mentors.

I extend my heartfelt thanks to all the ECD food handlers who participated in this study. Your willingness and the time you dedicated to this research are greatly appreciated. I also want to express my gratitude to the Limpopo Department of Social Development (provincial office) for granting me permission to conduct the study in the registered ECD centres within the Sekhukhune District, Elias Motsoaledi Local Municipality.

Finally, to my colleagues, your support and effort were truly valued. Thank you for your contributions to this research.

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LIST OF ACRONYMS AND ABBREVIATIONS

- AIDS- Acquired Immune Deficiency Syndrome
- CCFs- Child Care Facilities
- DOH- Department of Health
- DSD- Department of Social Development
- DOE- Department of Education
- ECD- Early Childhood Development
- GECDS- Guidelines for Early Childhood Development Services
- HIV- Human Immunodeficiency Virus
- HR- Human Resource
- IDP-Integrated Development Plan
- KZN- Kwazulu-Natal
- SADHS- South Africa Demographic and Health Survey
- SPSS- Statistics Package for the Social Sciences
- SAPFBDG- South African Paediatric Food-Based Dietary Guideline.
- SA- South Africa
- SANHANES- South African National Health and Nutrition Examination Survey
- UNICEF-United Nations Children's Fund
- WASH- Water, Sanitation and Hygiene
- WHO- World Health Organisation

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ABSTRACT

Background: Nutrition is important for children's growth and development because it provides the essential components needed for physical growth, brain function, and mental development.

Aim of the study: The aim of the study was to determine the food handlers' nutrition knowledge, food handling practices, and daily menu availability in Early Childhood Development centres at Elias Motsoaledi Local Municipality, Sekhukhune District.

Methodology: A quantitative cross-sectional survey was conducted at Sekhukhune District, in Elias Motsoaledi Municipality. The convenience sampling method was used to select the population, which comprised of 60 registered and funded ECD centres, and 113 food handlers. A researcher-administered questionnaire and researcher-observation checklist were used to collect data. Data collected was analysed using SPSS software version 29.

Results: The study was conducted in 60 registered and funded ECD centres at Sekhukhune District, Elias Motsoaledi Local Municipality, with 113 food handlers. The majority of respondents (70.8%) had completed secondary education and 17.7% had tertiary qualifications. About 72.6% of food handlers scored 80 to 100%, indicating excellent knowledge. Almost all food handlers (96.7%) washed their hands before handling food and after using the toilet, while 86.7% washed their hands with soap before eating. The majority of food handlers wear appropriate protective clothing and cover their hair when preparing food. All ECD centres had a daily menu and (91.2%) were approved by the dieticians, while (8.8%) were not approved. Most ECD centres (76.7%) had their menu displayed on the wall, but the majority of centres (68.3%) did not adhere to their daily menu.

Conclusion: ECD centres should collaborate with nutrition experts during menu planning to ensure that they incorporate accessible and affordable nutritious foods into their daily meals. To enhance children's intake of essential vitamins and minerals, centres are encouraged to establish gardens where they can grow vegetables. This initiative can also help save money for other necessities.

Keywords: Nutrition knowledge, food handling practices and daily Menu.

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CHAPTER 1: INTRODUCTION OF THE STUDY

1.1 BACKGROUND OF THE STUDY

Early childhood development should provide services, education, and care to children, these services should be directed toward the child's holistic development, providing appropriate health, nutrition, and early stimulation education (Chinhara & Rembe, 2018). According to Ngololo, Kasanda, and Rooy, (2018), childcare centres are supposed to serve as safe areas for children; they must do so by providing safe drinking water, practising good hygiene and have adequate toilet facilities. Gelli, *et al*. (2018) indicated that ECD programs offer an excellent opportunity to provide nutrition interventions to preschool children. These synergies, when realized, can lead to improved child development and nutrition outcomes, thereby enhancing the overall quality of ECD services and fostering a sense of hope and optimism about the potential outcomes (Gelli *et al*., 2018).

The South African Paediatric Food-Based Dietary Guidelines (SAPFBDG) emphasize that providing enough nutrients in meals is essential for children's growth and development (Nzama & Napier, 2017). Adequate nutrition is essential for brain development as well as overall physical, social, emotional, and cognitive growth (Maalouf-Manasseh *et al*., 2016). According to Müller, Ronaasen, and Besada (2023), children have smaller stomachs and varying appetites, so they should be offered small meals four to six times a day. Snacks are as important as meals for daily nutrient intake, so a morning snack, lunch, and afternoon snack should be included.

According to the Department of Health (2016), individuals who care for children under the age of 5 have a unique opportunity to positively impact children's nutrition and food intake. Since eating is a vital part of life, staff responsible for preparing and serving food to children must have the necessary knowledge and skills in feeding infants and young children (DOH, 2016). Meals provided at ECD centers for children aged 6 months to 6 years should include a variety of foods and include ingredients from all food groups (Nzama & Napier, 2017).

Rapson, Conlon, and Ali (2020) report that food handlers knowledge about nutrition is important for children's health and can help establish healthier food habits. Staff in ECD centers should improve nutrition by following good food handling practices and maintaining proper hygiene. All food handlers must be trained and continue to receive training in early childhood development. Staff members in the ECD centres must have a solid understanding

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of health and wellness (Rapson, Conlon & Ali, 2020). Staff members must be knowledgeable and motivated to translate concepts into tasty, healthy meals. They must also have a basic understanding of nutrition knowledge with cooking methods and ingredients (Drummond & Brefere, 2014). This staff training is crucial because it directly affects the quality of care and nutrition given to young children (Drummond & Brefere, 2014).

UNICEF (2019) highlighted the role of food handlers in enhancing child nutrition. Their involvement in careful food preparation, cooking, and serving techniques in childcare centres is paramount. Furthermore, the appearance flavours, and textures of different foods are important, meaning children's meals should be colourful and appealing (UNICEF, 2019). Drummond and Brefere (2014) further noted that a lack of training in menu planning and food service practices can lead to nutrient and menu quality deficiencies. However, when staff members receive educational training on nutrition, either through workshops or engagement with nutrition award schemes, the nutrition standard can significantly improve, making the community's involvement even more crucial and integral to the process (Drummond and Brefere, 2014).

Meanwhile, Mayerson and Thompson (2013), suggested that during menu planning, the demographic of the population to be served must be taken into consideration. When assessing menus, it is also important to ensure they comply with municipal, provincial, and federal regulations. Menu evaluation helps the researcher identify if the ECD centre provides inadequate, adequate, or excessive nutrients (Payne-Palacio & Theis, 2015).

According to Garcia *et al*. (2008), food service personnel need to practice maintaining proper hygiene standards. Good hygiene and quality practices, both personal and in food handling practices, play an important role in preventing the transmission of food poisoning. Poor hygiene practices of food handlers can impact the spread of foodborne diseases. Good food service practices help reduce childhood deaths and disabilities (Garcia *et al*., 2008). Childcare centers must promote good nutrition for the children in their care, and all staff should be aware of hygiene standards, nutrition principles, and food safety laws (Runyowa *et al*., 2014).

Nzama and Napier (2017) report that the Minister of Social Development highlighted the ECD program as a key strategy for relieving poverty. This focus on ECD’s role in poverty alleviation can inspire hope and optimism, demonstrating the potential of these programs to make a lasting impact.

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The Children's Act 38 of 2005 requires that ECD centre operate for at least 8 hours a day, providing meals and refreshments to children present during mealtimes or snack times. The Act, along with its regulations, governs the provision of ECD services to young children (Children's Act, 2005). According to Nzama & Napier (2017), the Department of Social Development (DSD), a key regulatory body, developed the guidelines for Early Childhood Development Services (GECDS), which outline how to meet the nutritional needs of young children in ECD programs. These guidelines reflect the DSD's commitment to ensuring the well-being of children in ECD centers (Nzama & Napier, 2017).

Gelli *et al*. (2018) noted that children aged 2-6 years (preschoolers) are often left out of many nutrition and health programs until they start school. Although preschoolers may not have as many chances to benefit from programs aimed at improving growth, they still need proper nutrition and a balanced diet to meet their nutrient needs. This study looks at the menus, food handling practices, and nutrition knowledge of staff in ECD centers in the Sekhukhune District of Limpopo Province.

1.2 PROBLEM STATEMENT

Department of Social Development established norms and standards to regulate the operationality and registration of ECD centres stipulated in Section 79(2) and 94 of the Children's Act No. 38 of 2005. These norms and standards include making a safe environment for the children in the centres, good nutrition, personal and environmental hygiene, and curricula as outlined by the Department of Basic Education (Children's Act 38 of 2005). On an occasional basis, the social workers visit ECD centres to ensure that they comply with these departmental norms and standards. Now it has been found that some ECDs still struggle to fully comply with the stipulated norms and standards in South Africa due to several challenges such as poor infrastructure, inadequate training of staff, poor financial support and monitoring as well as evaluation (Baloyi & Makhubele, 2018).

According to Oguegbu (2021), when children are not given an adequate diet in terms of both quantity and quality, they may experience health issues that affect growth and development, such as mental impairment and malnutrition. Poor nutrition, including insufficient or low-quality food, can lead to losses in children's developmental and academic potential, contributing to long-term health and economic inequalities. Additionally, poor nutrition has immediate and short-term effects on mortality, physical health, and cognitive development (Muller, Ronaasen & Besada, 2023). Roberts et al. (2022) also confirmed that children lacking sufficient nutrition are at significant risk of cognitive impairment. Black and Dewey (2014) discovered that a lack

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of macronutrients such as energy, protein, and fat can lead to insufficient weight gain and stunted growth. Children under five years in low-income countries are particularly vulnerable to environments with widespread faecal contamination due to poor hygiene practices. To address this, food handlers in ECD centers must adhere to proper hygiene practices, covering food hygiene, eating behaviours, and access to WASH (Water, Sanitation, and Hygiene) facilities (Mwapasa *et al*., 2022).

The sustainable development goal of this study is goal no. 3, which ensures healthy lives and promotes well-being for all ages. The aim of the study was to determine the food handlers' nutrition knowledge, food handling practices, and daily menu in Early Childhood Development centres at Elias Motsoaledi Local Municipality, Sekhukhune District. Therefore, the study could contribute to ensuring that children in the ECD centres receive an adequate and appropriate safe diet that promotes proper growth and development. Ensuring healthy lives that include adequate and safe meals for children is crucial, as it can impact their mental health, which in turn harms their overall well-being (Oguegbu, 2021).

1.3 RESEARCH QUESTIONS/ HYPOTHESIS

Do the food handlers in the ECD centres in Sekhukhune District, Elias Motsoaledi local municipality, have proper knowledge of nutrition, food handling practices, and also adhere to their daily menu?

1.4 RESEARCH AIM AND OBJECTIVES

1.4.1 Aim of the study

The aim of the study was to determine the availability of the menu, the food handlers' nutrition knowledge, and food handling practices, in Early Childhood Development centres at Elias Motsoaledi Local Municipality, Sekhukhune District.

1.4.2. Objectives of the study

- To assess the nutrition knowledge of food handlers in the ECD Centres using a knowledge test questionnaire at the Elias Motsoaledi Local Municipality.
- To determine food handling practices of food handlers in the ECD centres in Sekhukhune District, Elias Motsoaledi Local Municipality.
- To determine the availability of the daily menu in the ECD Centres at Sekhukhune District, Elias Motsoaledi Local Municipality.

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1.5 SIGNIFICANCE OF THE STUDY

This study was conducted in the best interest of the children in the ECD centres. ECD programs are another platform recommended for delivering nutrition interventions to children. Food handlers' poor hygiene practices can harm children's growth and development and may promote the spread of foodborne diseases. Children need particular protection because they are among society's vulnerable members, as they depend on others daily. Therefore, this study may help promote and protect children's good nutritional intake in the ECD centres, promoting good health, growth, and child development. Furthermore, this study will help identify hygiene practices when preparing and serving meals to young children in Sekhukhune District, as it is vital when preparing and serving food.

The findings of this study could play a key role in improving menu planning and implementation in ECD centers, as well as enhancing the nutritional health of children. Moreover, the results may offer useful insights for the Department of Social Development and the Department of Basic Education in creating targeted training programs for ECD staff. This research adds to the broader field of nutrition by laying the groundwork for future studies.

1.6 DEFINITION OF CONCEPTS

Food handler- Person who comes into direct contact with food, or with any equipment or utensil used in food handling (Alemayehu, et al., 2021). In the current study, food handlers refer to anyone who is responsible for food preparation/ food handling in the ECD centres.

Daily Menu- is a detailed list of foods to be served in a single meal or across multiple meals over one or more days (Nutrition Guidelines for Early Childhood Development Centres, NDOH: 2016). In the current study, the daily menu refers to a planned list of meals and snacks offered throughout the day, designed to meet the nutritional needs of children in the ECD centre.

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CHAPTER 2: LITERATURE REVIEW

2.1 INTRODUCTION

This chapter examines existing research on food handlers' nutrition knowledge, food handling practices, and daily menus in Early Childhood Development (ECD) centres. It includes discussion on the role of Nutrition during early childhood, particularly for children under five, and the adverse effects of inadequate nutrition on physical growth and cognitive development. The connection between ECD programs and nutrition is also discussed in this chapter. The discussion in this chapter will also include hygiene protocols, hand-washing practices, and kitchen sanitation.

UNICEF (2019) reported that early childhood is characterized by significant physical growth and cognitive maturation. Poor nutrition in childhood can have enduring detrimental impacts on educational outcomes, health status, and socioeconomic prospects; this is likely for children from disadvantaged backgrounds. Chinhara and Rembe (2018) emphasize that ECD initiatives must incorporate comprehensive services, extending beyond mere care to include educational components to foster holistic development. These programs must prioritize health, nutrition, and early stimulation to facilitate optimal growth.

The Children Act, 38 of 2005, commands that care facilities operate for at least eight hours daily and supply meals and refreshments during designated mealtimes. Furthermore, the Act explains the regulatory framework for ECD services, with the Department of Social Development (D.S.D) issuing the Guidelines for Early Childhood Development Services (GECDS) to ensure the nutritional needs of children in ECD settings are adequately addressed (Nzama & Napier, 2017).

Gelli *et al*. (2018) highlight the tendency to exclude children aged 2 to 6 years from numerous nutrition and health programs until they reach school age. Despite the comparatively lower potential for gains from nutritional interventions regarding linear growth, pre-schoolers possess critical nutritional demands. A balanced and nutritious diet is vital to fulfilling their dietary needs and supporting overall health and development (Gelli *et al*., 2018).

The researcher will review the literature on nutrition knowledge of food handlers, food handling practices, and daily menus in the ECD centres. According to Rapson, Conlon, and Ali (2020), caregivers' understanding of nutrition is vital in enhancing children's health and can significantly promote healthier eating behaviours in children. Mpofu and Shumba (2012)

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emphasize that training for ECD practitioners in Nutrition and childhood development is paramount. Adhering to proper food handling practices is essential when serving young children, whose immune systems are still maturing, thus making compliance with food safety guidelines crucial. According to Terefe, Jembere, and Assimamaw (2023), food safety includes all aspects of food production, handling, storage, and preparation, aimed at preventing infections while retaining nutritional integrity.

2.2 EARLY CHILDHOOD DEVELOPMENT AND NUTRITION

Diet is essential for the growth and development of children; it promotes physical growth, neurological development, and cognitive function (Pinto et al., 2023). UNICEF (2022) emphasizes that a balanced nutritional intake is crucial for children's average growth and enables them to tackle life's challenges, thereby contributing to national development. The importance of proper nutrition in the first five years of life cannot be overstated, as it significantly influences subsequent developmental milestones. UNICEF (2019) observed that early childhood is marked by rapid physical and cognitive growth, necessitating appropriate nutritional interventions at critical developmental stages. According to Shabangu (2022), children's overall developmental potential is severely compromised without optimal nutritional support during this formative period.

2.2.1 Importance of good nutrition in children under five years

Poor Nutrition can negatively affect children's mental health, and this might affect their growth and development (Oguegbu, 2021). Good Nutrition is necessary for optimal cognitive functioning; well-nourished children will likely engage actively with their surroundings, contributing to learning and development. Good nutrition is crucial for brain development during the first 1,000 days, a time of rapid brain growth when key nutrients are needed in specific amounts to support proper brain development (Thorogood et al., 2020). According to Black and Dewey (2024), many organs, including the brain, depend on adequate nutritional intake for development. In addition, providing good Nutrition to children makes children stronger, healthier, and more intelligent. Nutrition is important for children, so it's essential to meet their age-related nutritional needs.

A balanced diet with essential vitamins, minerals, proteins, fats, and carbohydrates is important for preschoolers. It helps prevent malnutrition, boosts immunity, and reduces the risk of being underweight, obese, or developing chronic health issues. Improved nutrition also enhances memory, concentration, and learning behaviours (Kalinde et al., 2023). Aristova et al. (2024) state that a nutrient-rich diet for children under 5 supports brain development,

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cognitive growth, and bone and oral health, while also lowering the future risk of obesity. Good nutrition is important to children's health and development, setting the foundation for strong, healthy kids with optimal brain growth. The well-being of today's children directly impacts the future workforce. Therefore, investing in their nutrition and care is vital for building a successful and prosperous society (Pinto et al., 2023).

2.2.2 Consequences of poor nutrition on growth and development.

Poor nutrition limits children's developmental and academic potential, resulting in long-term health and economic inequalities. It also has immediate and short-term biological impacts on mortality, physical health, and cognitive development (Muller, Ronaasen & Besada, 2023). Black and Dewey (2024) note that deficiencies in essential macronutrients such as energy, protein, and fat can prevent proper weight gain and cause stunting. Inadequate nutrition, combined with exposure to illness and infections in early childhood, can have lasting effects on a child's health, affecting their growth, development, and overall well-being throughout life.

Soliman et al. (2021) confirmed that poor nutrition can lead to immediate and long-term effects, such as higher illness rates, poor child development and learning, and a greater risk of infections and diseases. Stunted children have lower cognitive abilities than those who are not stunted. They are less likely to attend school, often enrol late, and tend to perform poorly academically. Thorogood et al. (2020) also found that poor nutrition negatively impacts long-term physical growth and development, with stunting during this period linked to cognitive deficits and academic struggles later on. Due to poor nutrition, many children under five are not performing well at school. In South Africa, factors like poverty, malnutrition, and poor living conditions, which affect caregivers' physical and mental health, further hinder children's ability to thrive (Thorogood *et al.*, 2020).

Oguegbu (2021) explains that when children don't receive the right amount or quality of food, they may suffer mental issues or even die. Gelli et al. (2017) reported that the 2013 Lancet series on maternal and child nutrition found that undernutrition causes over 3 million child deaths annually, with stunting affecting at least 165 million children under five. Munthali, Mvula, and Silo (2014) stated that about 200 million children worldwide fail to reach their cognitive development potential due to factors like poverty, inadequate care, and poor health.

In Malawi, high poverty rates lead to inadequate food, making children more vulnerable to diseases like malnutrition and related disorders. Severe malnutrition can affect intelligence and school performance (Munthali, Mvula & Silo, 2014). A lack of essential nutrients like protein, carbohydrates, calcium, iron, zinc, and vitamin A can cause stunted growth,

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underweight and poor brain development. These deficiencies also weaken the immune system, increasing the risk and severity of infections and chronic illnesses, which can harm the child's health and increase the risk of death (Nzama & Napier, 2017).

2.2.3 The link between early childhood development programs and nutrition

Early childhood development (ECD) and nutrition are closely linked. ECD programs help improve young children's nutrition, along with providing social protection and healthcare (Thorogood et al., 2021). These programs aim to meet children's nutritional needs, so they should receive nutritious food daily at ECD centres (Muller, Ronaasen & Besada, 2023). According to the Department of Social Development and UNICEF (2006), ECD programs are crucial for delivering nutrition support to preschool children. Makanjana and Naicker (2021) highlight that ECD centres are key for reducing poverty among children under five in South Africa, offering health, nutrition, and early learning in a supportive environment.

Early Childhood Centres are where children spend much of their day and get about 30% of their daily food and drinks. These centres must provide balanced diets to support good health (Kalinde et al., 2023). Research shows that schools and childcare centres play a key role in creating healthy food environments and encouraging healthy eating habits (Bennett & Burns, 2020). Nutrition programs in ECD centres can improve children's health, regardless of their background (Pillay, Ali & Wham, 2022). ECD programs aim to support children's survival, growth, and development by addressing food, health, and care (Gelli *et al*., 2017). Pinto et al. (2023) note that preschool is when children develop physical and sensory skills, making proper nutrition crucial.

2.3 NUTRITION KNOWLEDGE OF FOOD HANDLERS IN THE ECD CENTERS

Rapson, Conlon, and Ali (2020) highlight that a caregiver's nutrition knowledge is crucial for children's health and can play an important role in developing healthier eating habits in children. A study in New Zealand found that an overall nutrition knowledge score of 61% indicates a need for improved nutrition knowledge among staff in ECD centers. Similarly, research by Chege and Kuria (2017) in Kenya showed that caregivers' knowledge of nutrition was generally low. They lacked understanding of proper food preparation methods and suitable food combinations, which could negatively impact children's health.

Smit *et al.* (2021) found that less than half of ECD practitioners had strong nutrition knowledge. Mushaphi et al. (2015) reported that caregivers' nutrition knowledge affects how they feed their children, which impacts the children's nutrition. Drummond and Brefere (2014) indicated that

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a lack of training in menu planning and food service practices results in nutrient and menu quality deficiencies. When staff members receive educational training on Nutrition, either through attendance at a workshop or through the centre engaging with a nutrition award scheme, the nutrition standard can improve.

The Department of Health (2016) states that people who provide childcare to children less than 5 years are uniquely positioned to positively influence children's food and nutritional intake. Eating is an integral part of everyone's life, and staff members who prepare and serve food to children need Knowledge and skills in feeding infants and young children (DOH, 2016). Meals served at ECD centers or childcare facilities to children from 6 months to 6 years should include a variety of foods from all food groups (Nzama & Napier, 2017). Drummond and Brefere (2014) indicate that staff members in the ECD centres must have a solid understanding of health and wellness. They must be knowledgeable and motivated to translate concepts into tasty, healthy meals. They must also have a basic understanding of nutrition, cooking methods, and ingredients.

2.3.1 Food handlers' infant and young child feeding knowledge

At six months, babies should start eating soft, mashed foods. Since their stomachs are small, they can't eat much at once. Early childhood is the right time for children to learn healthy eating habits. If children eat too many snacks with low nutritional value (like biscuits, chips, and sweets) between meals, they may not be hungry at mealtime, which can lead to nutritional deficiencies due to insufficient nutrient intake (Abeshu et al., 2016).

Nzama and Napier (2017) reported that participants in 40 New York and 20 Texas-based childcare centres needed better Knowledge about a balanced diet. A similar observation was made in the study conducted by Mokone et al. (2022) in Gauteng, Northwest, and other parts of Limpopo ECD centres, which showed that most respondents need more Knowledge or awareness about choosing healthy diets. On the contrary, Shabangu (2022) reported that participants in KZN ECD centres had commendable Knowledge of a healthy diet, and they understood that starchy and carbohydrates should form part of the everyday meal for a balanced diet. In addition, the food handlers in KZN ECD centres had satisfactory Knowledge about healthy diets.

McCarthy *et al*. (2020) stated that fruits and vegetables are crucial for preventing obesity and other chronic diseases. Low consumption of these foods is considered a risk factor for global adult mortality. Hampton (2022) found that fruits and vegetables are essential to a healthy

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diet, offering vital nutrients such as vitamins, calcium, and fibre. Increased intake of fruits and vegetables is associated with a reduced risk of chronic diseases. The WHO recommends a minimum daily intake of fruits and vegetables for all individuals, and it's important to understand their nutritional benefits and follow the intake guidelines.

A study by Andreyeva *et al*. (2018) in Connecticut, USA, found that food handlers had good knowledge about serving fruits and including vegetables in the menu. Similarly, a study in Botswana ECD centers by Gumede (2021) showed that food handlers were knowledgeable about the importance of consuming fruits. However, a study in Harare, Zimbabwe, by Lewis *et al.* (2022) found that food handlers needed to improve their knowledge about fruits and vegetables. Likewise, a study in Makhuduthamaga Municipality by Motebejane et al. (2022) showed that caregivers lacked knowledge about the daily consumption of fruits and vegetables.

2.4 FOOD HANDLING PRACTICES IN ECD CENTRES

2.4.1 Hygiene practices

Daily personal hygiene includes activities like bathing, washing clothes, brushing teeth, trimming nails and hair, and washing hands before meals and after using the toilet. Poor hygiene increases the risk of infections, which can harm children's development. Good hygiene prevents diseases and promotes health. Cleanliness habits are shaped by social, family, and personal factors, as well as children's knowledge and attitudes toward hygiene. Maintaining cleanliness in areas like the kitchen is also important (Dutta, 2024).

In low-income countries, children under 5 often face environments with widespread faecal contamination due to poor hygiene. Food handlers in ECD centres must follow proper hygiene practices, ensure food safety, teach children how to eat, and provide access to WASH (Water, Sanitation, and Hygiene) facilities (Mwapasa et al., 2022). Petermann-Rocha *et al*. (2023) suggest that poor hygiene can affect early childhood development, making hygiene promotion essential for preventing diseases and supporting good health. Melariri *et al*. (2019) reported that proper hygiene is crucial for children's survival and development.

According to Ngololo, Kasanda, and Rooy (2018), childcare centers should provide a safe environment for children by ensuring access to clean drinking water, maintaining good hygiene, and having adequate toilet facilities. Melariri *et al*. (2019) emphasize that water, sanitation, and hygiene (WASH) are crucial for promoting healthy living and fostering a safe environment for child development. Diarrhoea continues to be a leading cause of death among

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children under 5 worldwide. Furthermore, inadequate WASH conditions can adversely affect children's growth, particularly contributing to stunting (Melariri *et al.,* 2019).

The findings of the study conducted in Gauteng province by Nyawo, Kesa, and Onyenweaku (2021) show that, in Gauteng, food handlers stressed the importance of starting each day clean and wearing appropriate attire in the kitchen. Food handlers from Gauteng province District A, B, C, D and E agreed that it is important to comply with hygiene practices such as washing hands before food preparations, covering hair at all times, wearing no jewelleries in the kitchen, cleaning of the kitchen facility, maintaining good personal hygiene such as bathing, oral hygiene, and nails care.

The food handler from District B stated that it is very important to comply with hygiene practices, as it helps them pay attention when handling and preparing food. Food handlers from District C asserted that practicing good hygiene minimizes bacteria growth and food contamination. District D and E food handlers also confirmed that good hygiene practices assist in ensuring that children eat clean and safe food. With regard to personal hygiene practices compliance, food handlers from Districts A, B, C, D, and E maintained that they observed hygiene practices all the time when handling and preparing food. Food handlers from all five districts (City of Johannesburg, City of Tshwane, Ekurhuleni, Sedibeng, and West Rand) confirmed that good hygiene practices guarantee the safety and cleanliness of food for ingestion, minimising the spread of bacteria (Nyawo, Kesa & Onyenweaku, 2021).

2.4.2. Hand washing

Food handlers in ECD centers must maintain proper personal hygiene by washing their hands before handling food and after using the toilet (UNICEF, 2019). Dutta (2024) highlights that, hands of food handlers are one of the main ways viruses spread in food areas, as hands come into direct contact with food more than other parts of the body. It is crucial for food handlers to thoroughly wash their hands using hot water and soap (preferably liquid soap). All areas of the hands and wrists should be washed under running water or with a bucket if running water is unavailable. The Food and Agriculture Organization of the United Nations and WHO (2017) in their food handler's manual state that food handlers must wash their hands with water and soap before handling food and after any activity that may contaminate their hands, while also keeping nails trimmed and clean. According to Babulall, Louis Lange &Van Wyk (2025), it was emphasized that wiping hands with a cloth instead of proper washing can spread microorganisms; therefore, food handlers need to practice proper hand washing. A total of 94.2% of respondents believed that frequent hand washing during food preparation is worth

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the extra time.

Furthermore, Melariri (2024) stated that food handlers in the ECD centres are uniquely placed to influence the hand-washing practices of children. Children are more likely to practice healthy behaviours at a young age; good hygiene behaviours, learnt at an ECD level. A study in Ethiopia by Fekadu et al. (2023) found that most food handlers practiced hand washing and cleaning the kitchen before and after food preparation. The majority (92.3%) washed their hands after using the toilet, and 91.8% did so after sneezing.

In Blantyre, Malawi, a study by Mwapasa et al. (2023) showed that none of the food handlers washed their hands with soap during food preparation. 44% washed their hands with water only, and 56% did not wash their hands at all. In contrast, a study in Zimbabwe by Lewis (2022) revealed that 80% of food handlers washed their hands with soap before handling food. A similar finding was reported in a study by Shabangu (2022) in KZN ECD centres, where food handlers practiced proper hygiene by washing their hands with soapy water after using the toilet and before food preparation.

2.4.3. Cleaning the kitchen

The study in Malawi, Blantyre, by Mwapasa et al. (2022) found that seven out of ten selected ECD centres had kitchens available for food preparation, and these were clean. The study in Ghana by Akabanda et al. (2017) found that most food handlers knew kitchen sink drains should be cleaned daily to maintain cleanliness and hygiene. A similar study conducted in KZN by Shabangu (2022) also reported that the food preparation areas were clean, no sanitization was practiced at most centres, and cleaning chemicals were available at most ECD centres. Lewis (2022) reported that kitchen facilities in 15 ECD centres in Zimbabwe were generally clean, and pests were observed in only two of the ECDs.

2.4.4 Food Safety

Food safety refers to the prevention of food hazards that could negatively impact consumers' health. It is important to maintain food safety at every step of the food chain, including production, harvesting, processing, storage, distribution, preparation, and consumption (Kaur *et al.*, 2022). According to Ramful, Jallow, and Menon (2017), Food safety is vital when preparing meals for children, as their immune systems are still developing, and they are more vulnerable to infections. Strict adherence to food safety guidelines during preparation is essential to protect them from potential illnesses. Food safety involves properly producing, handling, storing, and preparing food to prevent contamination while preserving essential

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nutrients for a healthy diet. It also ensures that food remains safe to consume when prepared and eaten as intended without posing any harm. UNICEF (2019) reported that food contamination, whether caused by environmental factors or microorganisms, poses serious risks to children's health. Infants and young children are particularly vulnerable due to their developing metabolic systems, and the maturation of critical organs can be disrupted, potentially leading to permanent and lifelong health consequences.

A study conducted in five districts in Gauteng by Nyawo, Kesa, and Onyenweaku (2021) found that 20 food handlers across the districts followed various food safety measures during food handling and preparation to ensure food safety. A food handler from District A shared that she followed specific food safety practices, stating, "I always make sure to store food properly and wash my hands after using the toilet." Food handlers in District B confirmed they adhered to most food safety principles. Additionally, food handlers in Districts C, D, and E reported wearing appropriate uniforms, covering their hair, keeping their nails trimmed, and maintaining cleanliness in the kitchen and with utensils (Nyawo, Kesa & Onyenweaku, 2021).

2.4.4.1 Food safety training for food handlers in the ECD centres

Training food handlers can improve food safety and help reduce food poisoning incidents. It also boosts job satisfaction, increases loyalty to the program, and can reduce turnover and absenteeism (Arendt *et al*., 2013). Staff training benefits employees by improving morale and benefits employers by increasing productivity (Topliceanu et al., 2015). Investing in staff development, whether through training or time for in-service education, leads to greater productivity, higher-quality meals, and better service to children (Sibanyoni, 2017). Commitment is crucial to shaping food handlers' attitudes and actions to achieve the goals of the ECD food service program. Mandatory training for food handlers in ECD centers should provide the necessary knowledge and skills for handling food safely. Managers should monitor food handlers to ensure they follow correct food handling procedures (Arendt *et al*., 2013).

2.5 MENU IN THE ECD CENTRES

2.5.1 Things to Consider During Menu Planning

It is indicated that when planning the menu, the centre should ensure that each main meal includes meat or meat alternatives, such as fish or eggs, with fish being served at least once a week. Meals should offer a variety of textures and shapes, such as grated, chopped, mashed, or sliced vegetables. Additionally, the centre should prioritize seasonal and locally grown fruits and vegetables. At least half of the grain products, like whole grains (e.g. bread and oats), should be offered daily. Morning and afternoon snacks should be planned to

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complement the main meals. Healthy fats, which are important for children's growth, should also be included in the menu, such as vegetable oil, soft margarine, and avocado. Water must be provided with each main meal and available throughout the day. It is recommended that centres plan a rotating menu, with at least a four-week cycle, to ensure variety and nutritional balance (HealthUnit, 2014).

2.5.2 Menu adequacy in the ECD centre

According to the D.S.D. guidelines, ECD centers that operate for eight hours or longer should provide children with two meals (breakfast and lunch) and two snacks. These meals and snacks should meet children's basic nutritional needs. A nutritious diet in childhood is essential for good health and contributes to a higher quality of life later on (Shabangu, 2022). Additionally, Muller, Ronaasen, and Besada (2023) stated that the number of meals offered in the center depends on the child's duration of stay. However, breakfast should be provided to all children, as not all may have this meal at home if the program starts at 7:00 AM. If children are at the center for 5-8 hours, they should be served a morning snack, lunch, and an afternoon snack. The Nutrition Guidelines also recommend a two-week menu with suggested recipes for each meal to ensure variety. A nutrition expert must approve the menu. The menu planned must be affordable and relevant to the facility and capacity. According to Frampton *et al*. (2014), preschool-aged children in ECD centres eat most of their meals outside the home; therefore, the centres must provide healthful and nutritionally adequate meals.

Centers must follow menu and dietary regulations set by state authorities. According to Clampett (2016), a daily menu should be displayed at the ECD center to ensure children's nutritional needs are met and allow parents to check the food provided. The menu should balance carbohydrates, proteins, and vegetables. Frampton *et al*. (2014) found that in Oklahoma, ECD centers must display the current menu and follow it. Their study also showed that 8% of ECD center menus in Oklahoma were planned by a registered dietitian or nutritionist.

When applying for the subsidy, the centre must place a menu in a visible place at their facility, but there needs to be more follow-up of its use or adherence after the subsidy is approved (Muller et al., 2023). Lewis (2022) reported that all ECD centres in Zimbabwe displayed the menu on the wall and had low compliance with a planned menu. In addition, Lewis (2022) reported that (73.3%) of ECD centres partially adhered to the daily menu displayed on the wall as they either omitted or substituted food items in the menu. According to Nzama & Napier (2017), the study's findings show that the menu served in the ECD centres in Inanda needs to be nutritionally adequate. The study conducted by Shabangu (2022) at the ECD centres in the

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Ntuzuma area in Durban showed that all visited ECD centres had daily menus and different food groups to ensure healthy dietary intake for children. However, snacks were only provided during some ECD visits. Furthermore, findings of the study conducted by Shabangu (2022) show that ECD menus in KZN and Vhembe district in Limpopo were inadequate, as they did not meet (60%) of the daily requirements of nutrients as recommended by the Department of Social Services ECD guidelines.

2.6 SUMMARY OF THE LITERATURE REVIEW

This chapter discussed different literature reviews on food handlers' nutrition knowledge, food handling practices, and the daily menu in the ECD centres. The researcher discussed early childhood development and nutrition, focusing on the importance of good nutrition in children under five, the consequences of poor Nutrition on growth and development, and the link between early childhood development programs and nutrition. The researcher further discussed the nutrition knowledge of staff members in the ECD centres, focusing on their knowledge of breastfeeding, feeding babies from 6 months to 6 years, the importance of taking or consuming fruits and vegetables, and their general knowledge about food contamination.

This chapter also explored food handling practices in ECD centers, insights from various studies, and food safety regulations in South Africa. The focus was on hygiene practices such as cleaning the kitchen and hand washing. Proper food handling is critical when serving meals to children, as their immune systems are still developing, making it essential to follow food safety guidelines during preparation. Lastly, this chapter addressed the nutritional status of children, focusing on conditions such as underweight, wasting, and stunting. In conclusion, the researcher explored the daily menus at ECD centres, menu planning processes, key factors to consider when planning meals in these centres, and the adequacy of the menus. The study evaluates the menus, food service practices, and nutrition knowledge of staff members at ECD centres in the Sekhukhune District, Elias Motsoaledi Municipality, in Limpopo Province.

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CHAPTER 3: RESEARCH METHODOLOGY

3.1 INTRODUCTION

This chapter describes methods used for data collection and analysis in the research. It includes details about the study design, location, population, and sampling techniques. Additionally, it explains the measurements and methods applied, pre-testing procedures, data collection approaches, and strategies for managing the data.

3.2 STUDY DESIGN

The research approach was quantitative. O'Leary (2017) describes the quantitative research approach as research highly reliant on quantified or numeric data and describes the trends as well as an explanation of the relationships between variables. The study design was a cross-sectional survey. According to Van Zyl et al (2017), a cross-sectional study is a 'snapshot' of a population at a given time, and it is generally conducted over a relatively short period. The ECD food handlers were interviewed once using the research questionnaire, and the researcher's observational checklist was also conducted on the same day of data collection, focusing on the food handling practices and hygiene.

3.3 STUDY POPULATION

According to O'Leary (2017), population refers to the entire group of people, objects, or events that share a common characteristic. The study population included food handlers responsible for meal preparation at the ECD centres in the Elias Motsoaledi Local Municipality. The data was collected across 60 registered and funded ECD centres, with 113 food handlers participating in the research, ensuring a broad representation of the staff members involved in the study.

The Final Integrated Development Plan (IDP) and Budget Review, 2019 to 2020, indicated that the Elias Motsoaledi Local Municipality has 133 ECD centres, with 60 registered and funded. Centres for Early Childhood Development have been established in most villages. Some of these centres get support from the Department of Education, while others depend on contributions by beneficiaries. Below is the list of ECD centres visited.

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Table 3.1: List of ECD centers

ECD Code	No of children	Number of caregivers	ECD code	Number of children	Number of caregivers	ECD code	No of children	Number of caregivers
1000	33	02	3200	25	03	5400	48	05
1100	21	03	3300	38	03	5500	48	04
1200	130	05	3400	65	05	5600	98	06
1300	85	07	3500	63	06	5700	41	03
1400	44	03	3600	28	03	5800	41	03
1500	108	05	3700	90	06	5900	87	04
1600	80	04	3800	91	04	6000	66	03
1700	33	03	3900	83	05	6100	83	04
1800	42	03	4000	52	05	6200	38	03
1900	100	05	4100	82	04	6300	51	03
2000	21	03	4200	36	04	6400	80	05
2100	64	04	4300	53	04	6500	36	03
2200	36	03	4400	93	06	6600	34	04
2300	57	03	4500	48	05	6700	64	05
2400	55	03	4600	40	04	6800	44	03
2500	32	03	4700	48	04	6900	66	04
2600	62	02	4800	59	03			
2700	58	04	4900	64	04			
2800	43	03	5000	44	06			
2900	30	04	5100	58	04			
3000	81	04	5200	50	05			
3100	68	04	5300	105	07			

3.4 AREA OF THE STUDY

The study was carried out at ECD centers within the Elias Motsoaledi Local Municipality, located in the Sekhukhune District of Limpopo Province. It is one of the four local municipalities in the district, with Groblersdal serving as its administrative seat. Established in 2000, the municipality is classified as a category B municipality (local municipality) under the Municipal Structure Act of 1998 (Final et al. Plan (IDP) & Budget Review, 2019-2020). The research was conducted in this municipality due to its accessibility to the researcher, with approximately 60 ECD centers. A map of Elias Motsoaledi Local Municipality is provided below.

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Figure 3.1. Elias Motsoaledi local municipality map

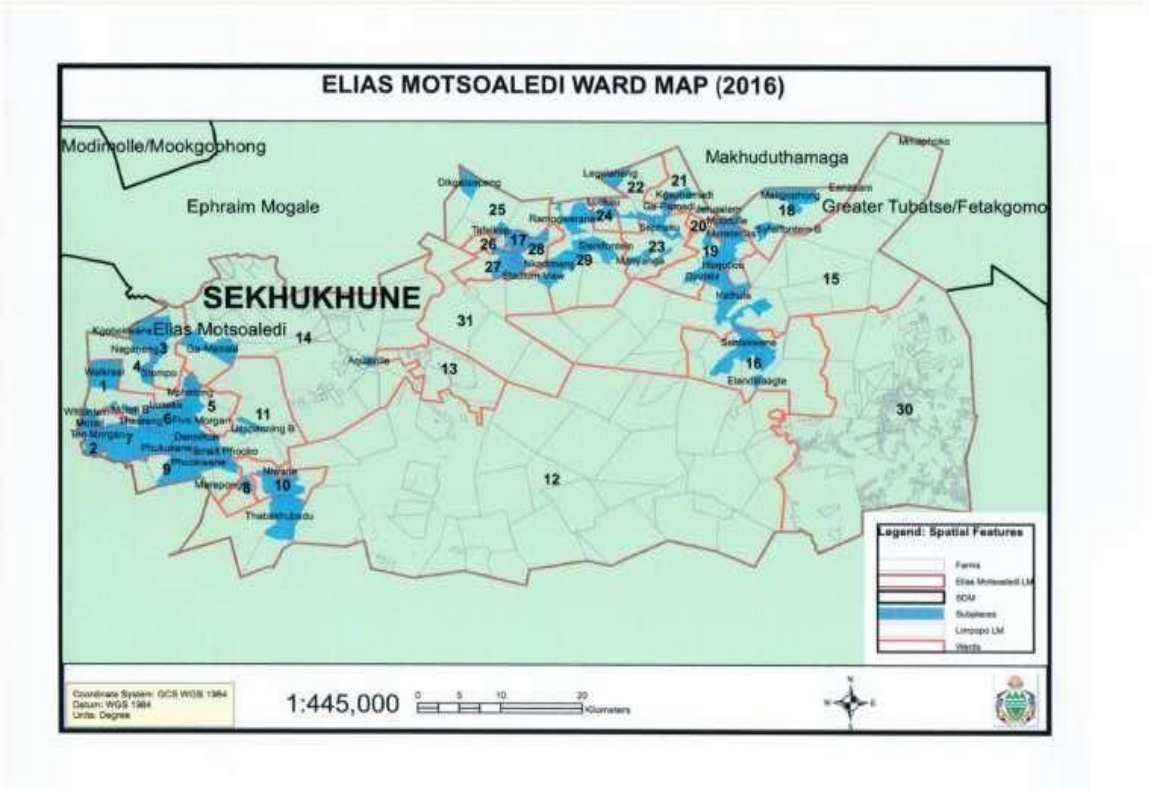


Figure 3.1: Elias Motsoaledi local municipality map

3.5 SAMPLING AND SAMPLE SIZE

Convenience sampling was used to select registered and funded ECD centres, and 113 food handlers. Convenience sampling is a non-probability sampling method where units are selected for inclusion in the sample because they are available and accessible for data collection (Nikolopoulou, 2022). The researcher applied the convenience sampling by including only registered and funded ECD centres in the Elias Motsoaledi Local municipality. The researcher only focused on Elias Motsoaledi ECD centres because they are accessible. Only registered and funded ECD centres were included in the study because the subsidy they receive makes it easy for them to access nutritious food and adherers to their daily menu.

3.6 INCLUSION AND EXCLUSION CRITERIA

3.6.1 Inclusion criteria

The study included all food handlers in ECD centers within the Elias Motsoaledi Local Municipality who agreed to participate and had signed the consent forms. Only the ECD centres that are registered and funded by the Department of Basic Education in the Elias Motsoaledi Local municipality were included in the study.

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3.6.2. Exclusion criteria

Food handlers who were unavailable on the day of data collection were excluded from the study. Additionally, all ECD centres that are registered and not yet funded by the Department of Basic Education were excluded from the study.

3.7 DATA COLLECTION

Devlin (2018) defines data collection methods as the procedures that outline the techniques to be used, the tools for measurement, and the activities involved in conducting a research study. To maintain privacy, respondents were interviewed in a separate room. Data was collected using two instruments: a questionnaire and observation checklists. Data collection was conducted from October 2022 to March 2023. The researcher visited one ECD center per day.

3.7.1. Data collection instrument

Two data collection instruments were developed based on relevant literature and the study objectives. The first instrument is a questionnaire (Appendix A) with four sections: Section A (Socio-demographic Information), Section B (Assessment of Menu, Hygiene Practices, and Nutrition Knowledge of food handlers), Section C (Nutrition Knowledge Assessment), and Section D (Hygiene Practices Assessment). The second data collection instrument is the researcher-observation checklist(**Appendix B**), which consists of the following three sections: Section A (menu evaluation in the ECD centre), Section B (food handling practices in the ECD centre, and Section C (personal hygiene checklist).

The data collection instrument (questionnaire) was developed in English and then translated into Sepedi by language experts (**Appendix C**) from the Department of Languages at the University of Limpopo. The nutrition expert reviewed the research instrument to ensure that it met all the research objectives and for accuracy and comprehensiveness.

3.7.2 Data collection procedures

3.7.2.1. Interviews

Interviews were conducted by the researcher in a separate room to ensure privacy. The interviews were conducted in the researcher's local language (Sepedi). The researcher administered the questionnaire because there are some food handlers who cannot read and write in the centres. This was done to ensure that respondents were asked similar questions and that accurate information was obtained. Using the local language also ensured that respondents understood the questions and could respond in their language. The questions in

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the questionnaire were multiple choice; therefore, the correct answer was ticked in the questionnaire.

3.7.2.2. Structured observation

Structured observation is a technique used to systematically monitor and record an individual's behaviour based on predefined categories (Bryman, 2012). The researcher developed the observation checklist. Observations occurred on the same day as data collection, where the researcher observed the food handling practices and menu adherence during the visit. The observation checklist consists of the following three sections: Section A (daily menu in the ECD centre), Section B- food handling practices in the ECD centre, and Section C- personal hygiene checklist.

3.7.2.3. Likert scale

Nutrition knowledge involves understanding concepts and processes related to nutrition and health, such as awareness of diets and diseases, essential nutrient sources, and dietary guidelines and recommendations (Miller & Casady, 2015). In this study, nutrition knowledge pertains to the understanding that staff members in ECD centers have about nutrition-related processes, the role of food as a significant source of nutrients, and the importance of nutrient intake for children. The Likert Scale, adapted and designed based on the Department of Basic Education's achievement levels, assessed the staff members' nutrition knowledge. Table 3.2 below shows the Likert Scale used to evaluate the nutrition knowledge of food handlers.

The Likert Scale to determine the nutrition knowledge and food handling practices score was adapted from the Department of Basic Education's level of achievement (Department of Basic Education, 2009).

Table 3.2: Achievement level description of respondents' nutrition knowledge

Rating code	Description of competence	Percentage (%)
7	Outstanding achievement	80-100%
6	Meritorious achievement	70-79%
5	Substantial achievement	60-69%
4	Adequate achievement	50-59%
3	Moderate achievement	40-49%
2	Elementary achievement	30-39%
1	Not achieved	0-29%

3.8 SUBJECT RECRUITMENT

Prior to the study, the researcher obtained a permission letter (**See Appendix G**) from the Department of Social Development, responsible for social welfare and community

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development.

First visit

The researcher visited each ECD centre to request consent from the centre managers to participate in the study, providing approval letters from the Department of Social Development. At each centre, the researcher explained the study's purpose and procedures to the centre managers. Following this, appointments were made to meet with respondents involved in the study.

Second visit

The researcher provided food handlers at the ECD centre with an information sheet and consent forms. During this visit, the researcher explained the data collection procedures and the purpose of the study, which was to ensure that all food handlers were fully informed. Consent forms, distributed during the first visit, were collected after staff members reviewed and signed them.

Third visit

Data collection was conducted at this stage. A researcher observational checklist was conducted first, focusing on the food handling practices, hygiene of food handlers, and menu adherence. After completing the researcher's observational checklist, the researcher was followed by the researcher-administered questionnaire.

3.9 PRE-TESTING

Pre-testing is the phase in survey research where survey questions and questionnaires are tested on members of the target or study population to assess the reliability and validity of the survey instrument before it is finalized and distributed (Bhalla, Bahar, & Kanapathy, 2023). For this study, pre-testing was done to determine the data collection instruments' sequence, accuracy, relevance, and clarity. Before this, supervisors and nutrition experts reviewed the instruments to check the content and appropriateness of the questions. Pre-testing was conducted in 10% of the ECD centres that were not registered and funded by the Department of Basic Education, which is not part of the current study. This pre-testing aimed to confirm that respondents could understand and effectively respond to the contents of the instruments.

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3.10 VALIDITY AND RELIABILITY

3.10.1 Validity

According to Ahmed and Ishtiaq (2021), validity refers to how accurately a method measures the variable it aims to measure. Content validity checks how relevant and representative the measurement instrument is for what it is meant to measure (Rusticus, 2024). Face validity checks how much a test seems to measure what it is supposed to measure (Johnson, 2021). Additionally, the instruments were piloted and pretested before data collection. Content and face validity were applied to ensure validity in this study. Data collection instruments were reviewed by the supervisors, who are nutrition experts, and they provided feedback. A language expert translated the instruments into Sepedi to help respondents understand the questions; therefore, they were interviewed in their local language (Sepedi) to guarantee accurate information was collected.

3.10.2 Reliability

Reliability refers to the extent to which the results obtained from a measurement or procedure can be consistently reproduced (Bolarinwa, 2015). To ensure reliability, the researcher did not provide respondents with a specific date for data collection but conducted unannounced visits to the ECD centres. The test was conducted a week after the first visit, and the visit was done unannounced. Additionally, the same research instruments were used consistently across all centres to ensure uniformity and reliability in the data collection. Respondents were interviewed in the local language (Sepedi).

3.11 DATA MANAGEMENT AND STATISTICAL ANALYSIS

The researcher cleaned, coded, and captured data in a Microsoft Excel spreadsheet, then exported it to IBM SPSS's (Statistics Package for the Social Sciences) version 29. Descriptive statistics were performed for all variables in the study. The categorical variables were presented as frequencies and means. Continuous variables were presented as mean ± standard deviation (SD) for normally distributed data. Data was presented in tables, pie charts, and graphs. The data was well presented in Chapter 4.

3.12 NSTITUTIONAL APPROVAL

The proposal was presented to the University of Venda, Department of Nutrition in the Faculty of Health Sciences Higher Degree Committee. Ethical approval for the study was obtained from the University of Venda's Higher Degree and Research Ethics Committee (**SHS/21/NUT/05/0511-Appendix H**). The researcher then requested permission from the Department of Social Development to conduct the study. All approval letters were submitted to the ECD centre's principal, and permission to proceed with the study was obtained

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(**Appendix G**).

3.13 ETHICAL CONSIDERATIONS

Data collection only began after ethical clearance from the University of Venda Research and Ethics Committee **(SHS/21/NUT/05/0511) (Appendix H**). The study adhered to the principles outlined in the Declaration of Helsinki (2008) and complied with South African laws. The researcher followed the following ethical considerations:

3.13.1 Informed Consent

The researcher provided all food handlers with comprehensive information about the purpose of the research and the procedures they would experience. The information sheet (**Appendix D**) and an informed consent form (**Appendix E**) were developed following the University of Venda guidelines and were distributed to each respondent. The information sheet and consent form detailed every aspect of the study, including the handling of the data and its future use. Respondents were informed that, based on the findings of the study, this research might assist them in being equipped with advanced knowledge by attending workshops. The researcher will make necessary recommendations for all gaps identified during the research.

3.13.2 Voluntary participation

In this study, participation was entirely voluntary, and all respondents were informed from the beginning that their involvement was their choice, with no rewards or payments offered. No respondent withdrew from participating in the study during the process, and all food handlers participated willingly.

3.13.4 Confidentiality

The general principle of confidentiality is that the respondents' data must remain anonymous and not be disclosed to anyone. The researcher conducted individual interviews in a private room to ensure confidentiality. The researcher ensured that personal details were not recorded in the questionnaires, instead each questionnaire was coded. The ECD centres on the researcher's observational checklist were also coded instead of writing their names. The respondents' information was kept confidential and not disclosed to other respondents. This confidentiality was communicated to respondents to reassure them that their information and responses were secure and would not be used to their detriment.

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CHAPTER 4: PRESENTATION OF FINDINGS

4.1 INTRODUCTION

In this chapter, the researcher presented the study's results, including an overview of participants' demographic information, outcomes from nutrition knowledge of food handlers in the ECD centres, food handling practices and evaluation of the menus. The data and findings are illustrated through tables, charts, and graphs below.

4.2 SOCIO-DEMOGRAPHIC INFORMATION

4.2.1. Age and gender distribution of study respondents

Table 4.1 provides the socio-demographic information for the 113 respondents working at Early Childhood Development (ECD) centres. All respondents were female. Of these, 90.2% were 36 years and older, while 9.7% were aged 18 to 35 years (youth).

Table 4.1: Age and Gender distribution of study respondents (n=113)

Age range	**N**	**%**
18-35 (Youth)	11	9.7
36-59 (Adult)	80	70.8
60 and above (older persons)	22	19.4
Gender		
Female	113	100

4.2.2. Level of education

The majority of respondents (70.8%) had completed secondary education, while 17.7% held tertiary qualifications. Additionally, 7.1% had only attended primary school, and 4.4% had never attended school (Figure 4.1)

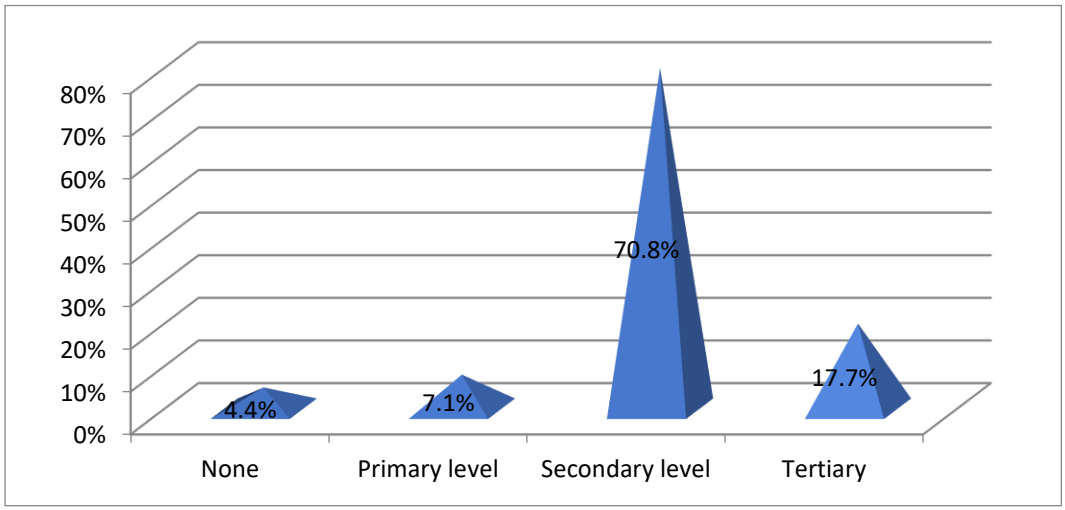


Figure 4.1: Educational level of the respondents (n=113)

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4.2.3. Funding status and amount of the ECD centres.

All centres receive funding from the Department of Basic Education, with the amount varying based on the number of children eligible for subsidies. Approximately 43% of ECD centres in the Elias Motsoaledi Local Municipality receive between R20,000 and R40,000, depending on their eligible child count. About 35% receive between R41,000 and R60,000, while 22% receive between R61,000 and R80,000, also based on the number of subsidized children.

Table 4.2: Socio-economic status of the ECD Centers (n=60)

Funding from the Department of Education	**N**	**%**
Yes	60	100
No	0	0
Funding Amount range		
R20 000-R40 000	26	43.3
R41 000-R60 000	21	35
R61 000-R80 000	13	21.6

4.2.4 Training on food handling practices and nutrition

Among all the ECD centres visited, approximately 85.8% of respondents had not received any food handling or nutrition training, while only 14.1% had completed such training (Figure 4.2.

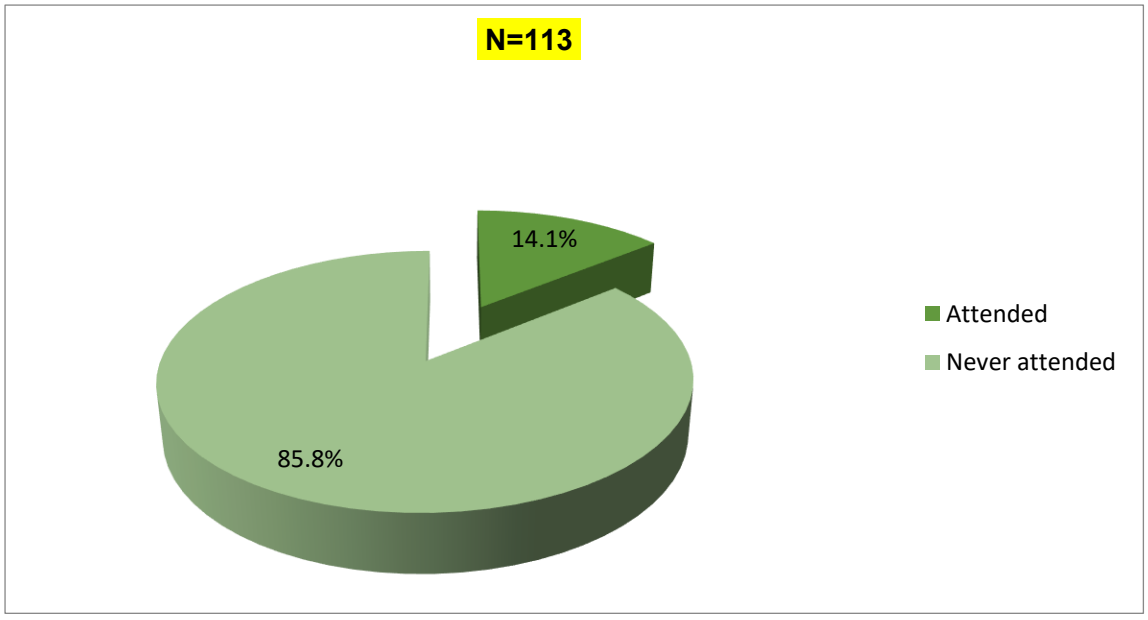


Figure 4.2: Training attended (n=113)

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4.3 NUTRITION KNOWLEDGE OF RESPONDENTS

4.3.1 Respondents ' response on the knowledge of food appropriate for the child

A significant majority of respondents, 82%, correctly identified that infants should be exclusively breastfed for the first six months. In contrast, 18% were unaware of this recommendation. Additionally, all respondents correctly recognized that starchy foods, vitamins, and minerals are suitable food groups for children aged 6 to 60 months (Table 4.3).

Table 4.3: Respondents' responses on the knowledge of food appropriate for the child (n=113)

Is food appropriate for a child below 6 months?	**N**	**%**
Breast milk or infant formula milk	93	82
Soft porridge	20	18
List of foods appropriate for children aged 6 to 60 months		
Starchy food, vitamins, and minerals	113	100.0

4.3.2 Respondents ' knowledge of eating a balanced diet

Table 4.4 illustrates respondents' knowledge of balanced diets. Most respondents understood that a child's diet should support growth and development. The majority defined a balanced diet as one that includes nutritious food. Over three-quarters of the respondents identified breakfast, lunch, and snacks as essential meals for children. Approximately 71.7% of respondents stated that consuming one fruit daily is important. However, only 60.2% recognized bread and cereal as sources of energy. Over three-quarters of the respondents correctly identified meat, fruits, and vegetables as sources of vitamins and minerals.

Table 4.4: Respondents' knowledge on eating a balanced diet (n= 113)

Why must children eat?	**N**	**%**
To satisfy hunger	16	14.2
For growth and development	97	85.8
Which is a balanced diet?		
Nutritious food	104	92.0
Lot of fats	7	6.2
Meat and pap	2	1.8
Types of meals for children per day		
Breakfast, lunch & snack	109	96.5
Breakfast only	3	2.7
Don't know	1	0.9
No. of fruits per day		
One	74	71.7
Two	6	5.3
Three	26	23.0
Source of energy		
Milk & cheese	42	37.2
Bread and Cereal	68	60.2
Meat groups	2	1.8
Don't know	1	0.9
Source of vitamins and minerals		
Meat, fruits & vegetables	110	97.3
Don't know	3	2.7

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Source of Protein		
Eggs & chicken	81	71.7
Chicken, olive oil & water	29	25.7
Don't know	3	2.7
Source of carbohydrates		
Cereal & bread	99	87.6
Cereal, grain, fish and meat	11	9.7
Fish and meat	1	0.9
Others	1	0.9
Don't know	1	0.9

4.3.3 Respondents' knowledge response to food storage

Almost all respondents correctly identified that meat should be stored in the refrigerator. The majority (94.7%) knew that raw vegetables should be kept at room temperature. Additionally, all respondents correctly identified that polony, milk, and meat must be stored in the refrigerator (Table 4.5).

Table 4.5: Respondents' knowledge response to food storage (n=113)

Food storage	N	%
raw meat		
In the cupboard	1	0.9
In the refrigerator	112	99.1
Raw vegetables		
Room temperature	107	94.7
Same Container with fruits	4	3.5
In a bucket	1	0.9
Don't know	1	0.9
Food that must be stored in the refrigerator		
Polony, Milk & meat	113	100.0

4.3.4 Respondents' knowledge response to nutrients found in tin fish

The study findings indicate that 22.1% of respondents recognized that canned fish is a reliable source of omega-3 fatty acids. However, the majority of respondents were unaware of the nutritional benefits of canned fish (Figure 4.3).

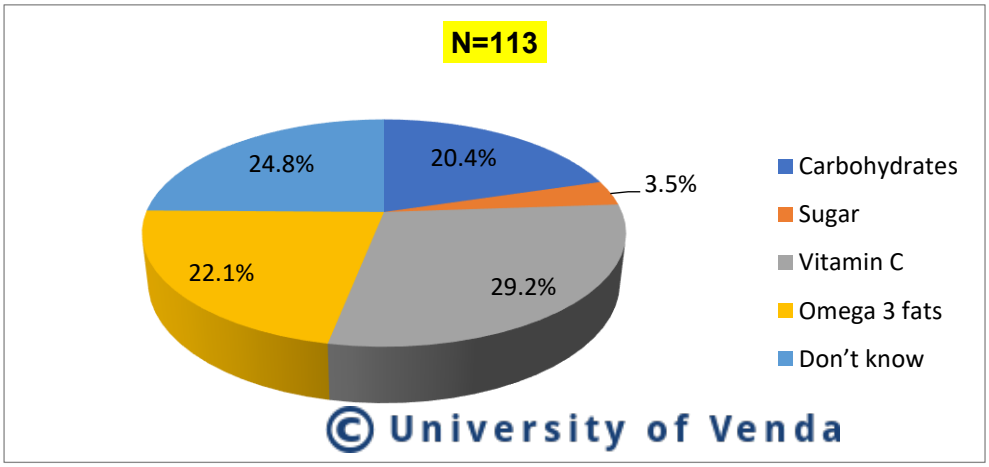


Figure 4.3: Respondents' knowledge response on nutrients found in tin fish (n=113)

4.3.5 Respondents' knowledge score on food contamination prevention

The majority of respondents (92.0%) correctly identified that wearing appropriate clothing in the kitchen helps prevent food contamination. In contrast, 8% of respondents were unaware of this preventive measure (Figure 4.4).

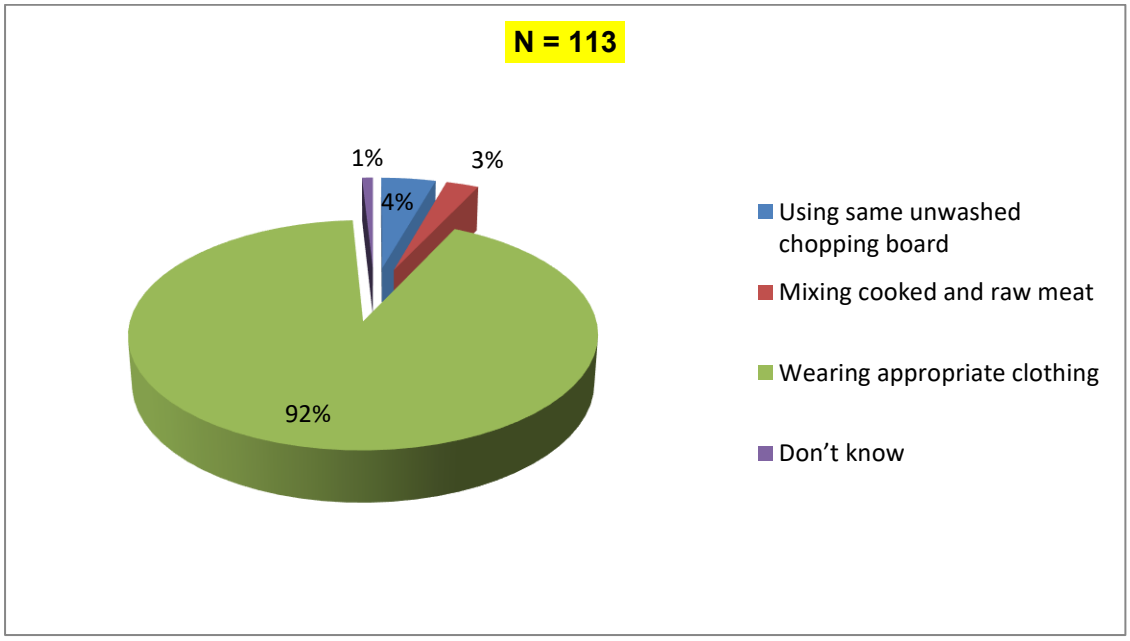


Figure 4.4: Respondents knowledge score on food contamination prevention (N = 113)

4.3.6 Respondents knowledge on causes of malnutrition and food borne Diseases

Almost all respondents correctly identified that malnutrition results from poor dietary choices or insufficient nutrient intake. Additionally, the majority (76.6%) recognized that food-borne diseases are caused by viruses. Furthermore, 96.5% of respondents understood that improper food storage can pose health hazards to children (Table 4.6).

Table 4.6: Respondent's knowledge response on causes of malnutrition and foodborne Diseases (n=113)

Causes of Malnutrition	**N**	**%**
Unsuitable dietary choices or not eating enough nutrients	111	98.2
Drinking a lot of water	1	0.9
Don't know	1	0.9
Causes of food-borne diseases		
Dehydration	10	8.8

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Viruses	90	79.6
Lack of exercise	2	1.8
Not eating breakfast	5	4.4
Others	2	1.8
Don't know	4	3.5
Improper storage of food may cause health hazard to children.		
Correct	109	96.5
Wrong	2	1.8
Not Sure	1	0.9
Don't know	1	0.9

4.3.7 Respondents' knowledge of calories and body muscles maintenance

Table 4.7 illustrates that 26.5% of respondents correctly recognized that butter and regular margarine have the same calorie content. Additionally, 46.9% of respondents understood that carbohydrates are important for building or maintaining body muscle.

Table 4.7: Respondents' knowledge response on calories and body muscle maintenance (n=113)

Which is higher in calories between butter and regular margarine?	**N**	**%**
Regular margarine	34	30.1
Butter	20	17.7
Both the same	30	26.5
Don't know	29	25.7
Food choice to build or maintain body muscles?		
Protein	49	43.4
Carbohydrates	53	46.9
Don't know	11	9.7

4.3.8 Respondents' knowledge response to Fruits and vegetables

All respondents correctly identified that an orange is a fruit and spinach is a vegetable. Additionally, approximately two-thirds (61.9%) of respondents knew that fruits and vegetables are sources of essential vitamins, minerals, and nutrients (Table 4.8).

Table 4.8: Respondents' knowledge response on Fruits and vegetables (n=113)

Which food is a fruit?	**N**	**%**
Orange	113	100.0
Which food is vegetable?		
Spinach	113	100.0
Importance of fruits and vegetables		
Gives energy	26	23.0
Source of vitamins, minerals and nutrients	70	61.9
Easily accessible	16	14.2
Don't know	1	0.9

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4.3.9 Respondents' knowledge response to better drink choice

Table 4.9 illustrates that the vast majority of respondents (96.5%) correctly identified water as the better drink choice. Furthermore, 85.8% of respondents understood that the primary importance of water is to keep people hydrated, while a minority were unaware of water's critical role in the human body.

Table 4.9: Respondents' knowledge response on better drink choice (n=113)

A better drink choice	**N**	**%**
Juice	3	2.7
Water	109	96.5
Don't know	1	0.9
The importance of water		
Helps to grow	5	4.4
Source of energy	9	8.0
Keeps hydration	97	85.8
Don't know	2	1.8

4.3.10 Respondents' overall knowledge test score on nutrition knowledge evaluation.

The findings of this study reveal that the majority of respondents (72.6%) possess outstanding knowledge about nutrition. Additionally, 22.1% have meritorious knowledge, 4.4% have substantial knowledge and 09 have adequate knowledge. Figure 4.6 below shows the distribution of respondents' nutrition knowledge rating based on a Likert Scale adapted from the Department of Basic Education (Figure 4.5).

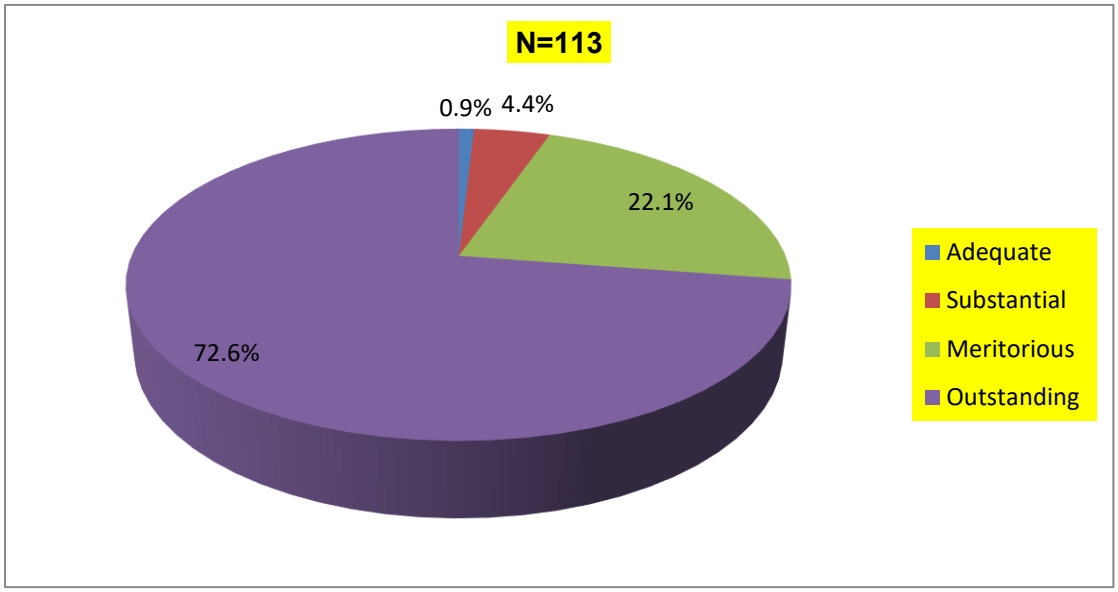


Figure 4.5: Respondents overall ratings on nutrition knowledge (n=113)

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4.4 FOOD HANDLING PRACTICES IN THE ECD CENTRE

4.4.1. Dish or utensils cleaning

The majority of respondents (85.8%) reported using a bottle brush and hot water to clean children's feeding bottles. Additionally, approximately 95.6% indicated that they clean utensils and plates both before and after use. Furthermore, 98.2% of respondents utilize dish detergent, hot water, dish cloths, sponges, and steel wool for cleaning utensils and plates (Table 4.10).

Table 4.10: Dish or utensils cleaning (n=113)

What's used to clean baby feeding bottles?	**N**	**%**
Bottle brush and hot soapy water	97	85.8
Bottle brush and cold water	1	0.9
No children who are bottle-fed	15	13.3
How often are utensils and plates cleaned?		
Sometimes	1	0.9
Kids clean their own plates after eating.	1	0.9
Before and after use	108	95.6
Other , specify	3	2.7
What's used to clean the utensils?		
Dish detergent, hot water, dish cloth, sponge & steel wool	111	98.2
Washing powder and warm water	2	1.8

4.4.2 Hands washing

The majority of respondents (94.7%) reported that children should wash their hands after using the toilet and before and after eating. Additionally, most respondents indicated that they use warm, soapy water for hand washing. Furthermore, 87.6% of food handlers wash their hands before and during food preparation. Most respondents (90.3%) acknowledged that hand washing helps prevent food contamination, and 98.2% agreed that food handlers should wash their hands after coughing. Moreover, 95.6% of respondents avoid touching their hair and face after washing their hands (Table 4.11).

Table 4.11: Hands washing (n=113)

When do children wash hands?	**N**	**%**
Only when they want to eat	3	2.7
Sometimes if we did not forget	3	2.7
After using the toilet, before and after eating	107	94.7
What's used to wash hands?		
Pure cold water	8	7.1
Warm soapy water	104	92.0
Wipe with a dishcloth	1	0.9
When do practitioners wash hand?		
Before and during food preparation	99	87.6
After preparing food	1	0.9
Sometimes	3	11.5
Why do you wash hands?		

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To prevent food contamination	102	90.3
To avoid different smells of food on hands	7	6.2
For food to taste good	4	3.5
Staff members must wash their hands after coughing and sneezing.		
Yes	111	98.2
Maybe	2	1.8
After washing hands, food handlers must avoid touching…….		
Food	3	2.7
Utensils	1	0.9
Hair and face	108	95.6
Other	1	0.9

4.4.3 Washing kitchen utensils

Almost all respondents reported washing their dishcloths daily, while only 0.9% reported that they wash a dishcloth sometimes. Additionally, 92.0% indicated that they use dish detergent and hot water to clean their chopping boards and 3.5% reported that they are using cold water to wash their chopping board (Table 4.12).

Table 4.12: Washing Kitchen utensils (n=113)

When is the dishcloth washed?	**N**	**%**
Every day after use	112	99.1
Sometimes	1	0.9
What is used to wash the chopping board?		
Cold water	4	3.5
Steel wool	2	1.8
Dish detergent and hot water	104	92.0
Other specify	3	2.7

4.4.4 Storage facility

The majority of respondents (97.3%) indicated that cleaning chemicals are stored in a designated storeroom, and 97.3% also noted that raw and cooked meats are stored separately in the refrigerator (Table 4.13).

Table 4.13: Storage Facility (n=113)

Cleaning chemical storage	**N**	**%**
Next to food preparatory area	2	1.8
In the storeroom	110	97.3
Other, specify	1	0.9
Where to store raw and cooked meat?		
Stored separately	110	97.3
In the same container	1	0.9
In the cupboard	2	1.8

4.4.5 Food handler's hygiene practices

Almost all respondents (97.3%) reported that food handlers wear aprons, caps, and disposable

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gloves. Additionally, 92.0% indicated that food handlers with wounds or cuts bandage their injuries and use disposable gloves. Furthermore, 92.9% of respondents understood that food handlers should remove jewellery, such as rings and bracelets while preparing food (Table 4.14).

Table 4.14: Food handler's hygiene practices (n=113)

Food handlers wear during food preparation.	**N**	**%**
Long dresses	3	2.7
Apron, caps, and disposable gloves	110	97.3
What happens to food handlers with cuts/wounds?		
Must wash the wound/cuts and continue with food preparation	6	5.3
Must bandage and put disposable gloves	104	92.0
Continue preparing if no one sees them	2	1.8
Other specify	1	0.9
Jewelleries to be removed during food preparation?		
Anklet	3	2.7
Rings and bracelet	105	92.9
others	1	0.9
Don't know	4	3.5

4.4.6 Health hazards prevention

The majority of respondents (96.5%) reported that, for effective food waste management, they portion food sizes appropriate to the children's ages. Additionally, 97.3% indicated that they always check the expiry dates of food before preparation to ensure that children are not given expired or potentially hazardous food (Figure 4.6).

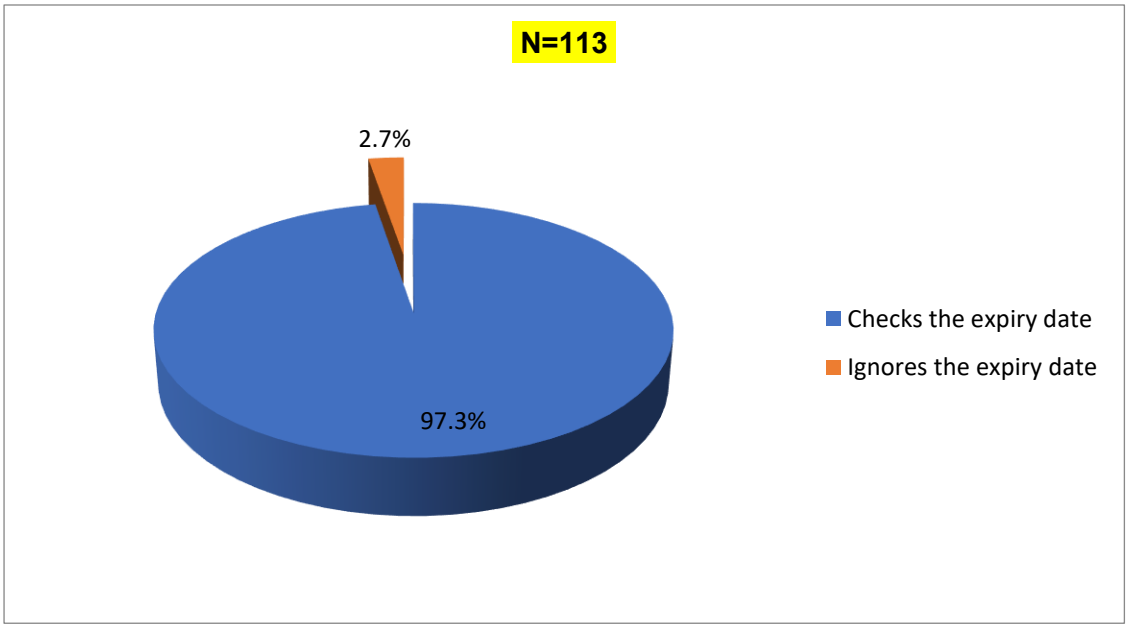


Figure 4.6: Health Hazards Prevention (n=113)

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4.4.7 8 Summary score of ECD respondents on Food Handling Practices

The majority of respondents (97.3%) were rated as having outstanding food-handling practices, while 2.7% were rated as having meritorious food-handling practices. The researcher used the adapted Likert scale (figure 3.2) from the Department of Basis Education in order to rate the respondent's food handling practices.

4.5 MENU IN THE ECD CENTRE

The majority of respondents (97.3%) reported that the menu is a list of dishes to be served at the ECD centre. Table 4.16 shows that 71.7% of respondents reported that dieticians or nutritionists approve the daily menu, while 5.3% were unsure who approves the menu. Additionally, 85.0% of respondents stated that the primary purpose of the menu is to ensure that children receive nutritious food daily. Study findings further reveal that 88.5% of respondents believe the menu should be adhered to daily, whereas 0.9% felt adherence to the menu is unnecessary as long as children are fed. Moreover, 92.0% of respondents indicated that displaying the menu on the wall is important to ensure its visibility and to guide the cook (Table 4.15)

Table 4.15: Menu understanding (n=113)

What is menu?	**N**	**%**
Different kinds of salads	2	1.8
List of dishes that are to be served	110	97.3
Seven colours meal	1	0.9
Who approves the menu?		
Nurse	3	2.7
Social worker	22	19.5
Dietician /nutritionist	81	71.7
ECD principal	1	0.9
Don't know	6	5.3
What is the importance of menu in the ECD centre?		
To ensure children receive nutritious food	96	85.0
Teaches caregivers to cook	13	11.5
Create awareness to children and caregiver	4	3.5
It is not important to adhere to the menu in the ECD centre.		
It is not important	12	10.6
Menu must be adhered to daily	100	88.5
No need to adhere to it, as long as children eat	1	0.9
The importance of displaying the menu in the wall.		
To decorate the wall	1	0.9
To ensure that it is always visible and guides the cook	104	92.0
To satisfy the social workers and other visitors.	8	7.1

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4.6 RESEARCHER OBSERVATIONAL CHECKLIST RESULTS

The results of the observational checklist will be presented in this section. The observation focused on three key areas: menu evaluation, food handling practices, and personal hygiene. The findings are detailed below.

4.6.1 MENU IN THE ECD CENTRES

The majority of ECD centres (76.7%) had their menu displayed on the wall. All ECD centres provided a clear and understandable daily menu that featured new meal patterns and essential nutrients, including protein, carbohydrates, fats, and vitamins. Most centres included breakfast, lunch, and snacks in their menus, whereas 1.7% offered only lunch and snacks, indicating that children at these centres do not receive breakfast. Additionally, all centres avoided including foods high in fats, sodium, and sugar (Table 4.16).

Table 4.16: Menu in the ECD centre (n=60)

Menu displayed on the wall	**N**	**%**
Yes	46	76.7
No	14	23.3
Essential nutrients available in the menu		
Yes	60	100.0
No	0	0
Does the menu include breakfast, Lunch and snacks?		
Yes	59	98.3
No	1	1.7
Is the menu clear and understandable?		
Yes	60	100.0
No	0	0
Does the menu include new meal patterns?		
Yes	60	100.0
No	0	0
Does the menu reduce fats, sodium and sugar?		
Yes	60	100.0
No	0	0
Does the menu include food high in vitamin A,C and Iron?		
Yes	60	100.0
No	0	0
Does the menu include fresh, canned and dried food?		
Yes	60	100.0
No	0	0
Does the menu include seasonal food?		
Yes	60	100.0
No	0	0

On the day of the visit, the researcher observed whether the centres adhered to their daily menus. The findings revealed that 68.3% of centres did not serve the dishes specified on the menu for that day, while 31.7% followed the menu as planned. Despite this, 91.7% of the ECD

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centres served food that was pleasing and acceptable to the children. All centres provided portion sizes appropriate for young children and included vegetables in their meals.

The researcher also noted that 75% of ECD centres served food at the times specified in the menu, while 25% served food either earlier or later than the scheduled times (Table 4.17).

Table 4.17: Menu served on the day of the visit (n=60)

Did they ECD serve what was in the menu on the day of the visit?	**N**	**%**
Yes	19	31.7
No	41	68.3
Is the food combination pleasing and acceptable to children?		
Yes	55	91.7
No	5	8.3
Are serving sizes sufficient for young children?		
Yes	60	100.0
No	0	0
Did the meal included fruits and vegetables?		
Yes	60	100.0
No	0	0
Did they serve food on the time stated on the menu?		
Yes	45	75
No	15	25

4.6.2 FOOD HANDLING PRACTICES

4.6.2.1 Protective clothing

Researcher observed that 60.0% of food handlers did not use gloves when handling or distributing unwrapped food. The majority of food handlers (93.3%) were wearing face masks and covering their heads in the kitchen (Table 4.18).

Table 4.18: Protective Clothing (n=60)

Do food handlers use gloves when touching or distributing unwrapped food?	**N**	**%**
Yes	24	40.0
No	36	60.0
Do food handlers always wear face masks and cover their heads in the kitchen?		
Yes	56	93.3
No	4	6.7

4.6.2.2 Kitchen

The researcher observed that all ECD centres visited had a kitchen to prepare food and the kitchen was separate from the eating, playing and storeroom. Furthermore, 90% of the ECD

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centres were observed cleaning their kitchen frequently. The researcher further observed that there were enough plates and utensils for each child in the centres and both the plates and utensils were clean and stored safely (Table 4.19).

Table 4.19: Kitchen (n=60)

Is there a kitchen to prepare food?	**N**	%
Yes	60	100.0
No	0	0
Is the kitchen separate from the eating, playing and storeroom?		
Yes	60	100.0
No	0	0
Is the kitchen area cleaned frequently?		
Yes	54	90
No	6	10
Are there enough plates and utensils for each child?		
Yes	60	100.0
No	0	0
Are the utensils clean and stored safely?		
Yes	60	100.0
No	0	0

4.6.2.3 Perishable Food Storage

All ECD centres were equipped with refrigerators for storing perishable food. The researcher observed that all perishable items were safely stored in these refrigerators. (Table 4.20)

Table 4.20: Perishable Food Storage (n=60)

Is there a refrigerator in the centre?	**N**	**%**
Yes	60	100.0
No	0	0
Are all perishable food stored in the refrigerator?		
Yes	60	100.0
No	0	0

4.6.2.4 Food safety

The researcher observed all food handlers in the ECD centres checking the condition and the use-by date of the food before preparing it. The majority of the centres (83.3%) did not have the food inventory list. Approximately 96.7% of food handlers removed their jewelleries while preparing food (Table 4.21).

Table 4.21: Food Safety (n=60)

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Do food handlers check the use-by date before preparing food?	N	%
Yes	60	100.0
No	0	0
Does the centre have food inventory list?		
Yes	10	16.7
No	50	83.3
Do food handlers remove jewelleries such as rings when preparing food?		
Yes	58	96.7
No	2	3.3

4.6.3 PERSONAL HYGIENE

4.6.3.1 Hand Wash

In most ECD centres (96.7%), the researcher observed that food handlers frequently washed their hands before handling food and after using the toilet. Additionally, food handlers consistently avoided touching their noses, ears, or other parts of their bodies during food preparation. Furthermore, 86.7% of ECD centres ensured that children washed their hands with soap before eating and monitored them to ensure proper hand washing (Table 4.22).

Table 4.22: Hand Wash (n=60)

Do food handlers wash their hands frequently?	N	%
Yes	58	96.7
No	2	3.3
Do food handlers avoid touching nose, ear or any part of the body during food preparation?		
Yes	56	93.3
No	4	6.7
Do food handlers wash hands before serving food?		
Yes	41	68.3
No	19	31.7
Do both children and food handlers wash their hands with soap?		
Yes	52	86.7
No	8	13.3
Are children monitored if they are washing their hands properly?		
Yes	40	66.7
No	20	33.3

4.6.3.2 Chopping board and food handlers cleanliness

The researcher observed that respondents in all the ECD centres were neat. About 95% of centres had a chopping board and 5 % were using trays as chopping boards. Both the

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chopping board and trays were clean (Table 4.23).

Table 4.23: Chopping board and food handlers cleanliness (n=60)

Are all staff members neat?	**N**	%
Yes	60	100.0
No	0	0
Is there a chopping board in the kitchen?		
Yes	57	95
Uses a tray as a chopping board.	3	5
Is the chopping board clean?		
Yes	60	100.0
No	0	0

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CHAPTER 5: DISCUSSION OF RESULTS

5.1 INTRODUCTION

The aim of the study was to evaluate the food handlers' nutrition knowledge, food handling practices, and menus in Early Childhood Development centres at Elias Motsoaledi Local Municipality, Sekhukhune District. This chapter discussed the study results and linking them to the existing literatures. It covers the discussion of the demographic information of the study participants, food handler's nutrition knowledge, food handling practices and menu in the ECD centres.

5.2 DISCUSSION OF THE SOCIO-DEMOGRAPHIC INFORMATION

In the current study, 70.8% of food handlers are adults, 19.4% are older, and 9.7% are youth, the findings of these results could be to the fact that adults and older people are more experienced for meal preparation. Comparable results have been reported in the Early Childhood Development Subsector Skills Plan (2020-2021), wherein the study conducted in Gauteng, Western Cape, and Kwazulu Natal shows that most employees or food handlers are in the 35-55 age groups.

The current study included 113 respondents, all of whom were female. This aligns with findings from a study in the Ntuzuma area of Durban, South Africa, where the majority of food handlers were also female (Shabangu, 2022). Additionally, the ECD Census (2021) reported that 91% of staff working in ECD centers in South Africa are women. These results reflect societal norms where women are typically seen as responsible for food handling and child care.

In the current study, most respondents had secondary education qualifications, and 17.7% had tertiary qualifications. Similar observation was made on the study conducted in KZN ECD centres by Shabangu (2022), where most respondents had secondary education and 18.1% had obtained college certificates. The level of education is fundamental to caregivers as it may assist them in understanding instructions on how to prepare certain foods and preserve nutrients. The stats SA reported the change in the level of education reached in South Africa. The number of people with no formal education decreased from 5.5% in 1996 to 1.6 in 2022, with non-completion of primary education declining significantly from 14.9% to 2.9%. Secondary school completion doubled from 16.8% in 1996 to 37.3% in 2022. Furthermore, diploma and certificate graduates tripled from 1.4 in 1996 to 3.5 in 2024 (Statistics SA, 2024).

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5.2.1 Funding

Registered and qualifying ECD centres receives funding or subsidy from the Department of Education, and it helps cover the costs of providing quality ECD services, such as nutrition, stimulation, administration, and payments of staff members. Children whose parents earn above R3800 per months do not qualify for subsidy (Halli, 2016). All ECD centres in the current study received funding from the Department of Basic Education. However, the amount received differs from one ECD to another based on the number of children who qualify to be subsidized. About 43% of ECD centres in Elias Motsoaledi Local Municipality receive amounts ranging from R20 000-R40 000. Meanwhile, 35 % are receiving amounts ranging from R41000-R60 000, and 22% are receiving amounts ranging from R61 000-R80000.

5.2.2 Training on food handling and nutrition

Most respondents in the current study never received formal training in nutrition. However, they rely on the educational information they hear from local radio, Television, and healthcare workers and their general knowledge. A similar study in Tshwane, Gauteng, South Africa, found that less than half of the respondents were qualified in ECD, and most (97.9%) reported never receiving training in food handling and nutrition. These findings concur with Smith et al, (2021), who emphasised the importance of training. Furthermore, Thorogood et al. (2020) highlighted that nutrition education is considered a crucial part of the Curriculum Framework for children from birth to four and should be included in the education and training of ECD practitioners.

5.3 NUTRITION KNOWLEDGE OF FOOD HANDLERS IN THE ECD CENTRES

According to Mushaphi et al., (2015), everyone involved in preparing and serving food to children must have knowledge on nutrition. The food handler's knowledge on nutrition plays an important role on the child's growth and development. A study by Chege and Kuria (2017) in Kenya showed that food handlers had limited nutrition knowledge, including poor understanding of food preparation and combinations, which can harm children's health. Many respondents in the current study reported that they have never received a formal training on nutrition; however they gained knowledge from the media and their households. As a result, 85.8% of respondents in the current study had strong nutrition knowledge. In contrast, studies in Kenya, Zimbabwe, and Sekhukhune district found food handlers had low knowledge about infant and young child feeding (Chege & Kuria, 2017; Lewis et al., 2022; Motebejane et al., 2022).

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5.3.1 Food handler's knowledge on feeding for children above six months

5.3.1.1. Healthy diets

The majority of respondents in the current study have adequate knowledge about healthy eating for children above six months; they understand the various kinds of food appropriate for children aged 6 months to 5 years. The majority of respondents (82%) correctly identified that infants should be exclusively breastfed for the first six months. In contrast, 18% were unaware of this recommendation. Additionally, all respondents correctly recognized that starchy foods, vitamins, and minerals are suitable food groups for children aged 6 to 60 months. In contrast, the study conducted by Mokone et al. (2023) in Gauteng, North West, and other parts of Limpopo ECD centres in 2023 shows that most respondents need more knowledge or awareness about choosing healthy diets.

In addition, the study conducted in KZN ECD centres by Shabangu (2022) shows that respondents had commendable knowledge of a healthy diet. They also understood that starchy foods and carbohydrates should be part of the everyday meal for a balanced diet. However, overall responses suggested that the food handler's knowledge of a healthy diet was generally satisfactory. In contrast, the study conducted by Nzama and Napier (2017), the findings of the study conducted in 40 New York and 20 Texas-based childcare centres, showed that respondents did not have good knowledge of balanced diets and meals were below the recommended dietary allowance for micronutrients and energy.

5.3.1.2. Food handler's knowledge on intake of fruits and vegetables for children

All respondents in the current study correctly identified fruits and vegetables. Furthermore, approximately two-thirds (61.9%) of respondents knew that fruits and vegetables are sources of essential vitamins and minerals. Therefore, it is important for children to consume at least one fruit and vegetable per day. About 51.7% of ECD centres served fruit to children, while 48.3% did not offer any fruit. All centres were noted to wash vegetables before preparation, and those that served fruits, such as apples, on the day of the visit were observed washing them before serving. A similar study by Motebejane et al. (2022) in Sekhukhune District found that food handlers lacked knowledge about the importance of eating fruits and vegetables daily. It showed that only one in eight children ate fruits daily, and 5.8% ate vegetables daily. This aligns with a study by Lewis et al. (2022) in Harare, Zimbabwe, where food handlers had limited knowledge of fruits and vegetables. However, a study by Gumede (2021) in Botswana's ECD centers found that food handlers understood the importance of fruits and vegetables,

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and children were given a variety of fruits and vegetables daily. These results are similar to those of Andreyeva et al. (2018), who found that food handlers understood the importance of serving fruits and vegetables.

5.3.2 Food Contamination Prevention

The majority of respondents (92.0%) correctly identified that wearing appropriate clothing in the kitchen helps prevent food contamination. In contrast, 8% of respondents were unaware of this preventive measure. The majority of respondents in the current study understand that they must maintain good personal hygiene to prevent food contamination. In a similar study conducted in Zimbabwe by Lewis et al. (2022), the results showed that the respondents had good knowledge about food contamination prevention by wearing suitable clothing, such as aprons and hair restraints. Akabanda (2017) found that food handlers in Ghana possessed good knowledge about food contamination, with nearly all participants recognizing the importance of general sanitary practices in the workplace, such as hand washing, using gloves, and properly cleaning utensils and equipment with detergents. Overall, institutional food handlers in Ghana demonstrated satisfactory knowledge of food safety and contamination (Akabanda, 2017). Similarly, a study in Malaysia by Sani (2014) showed that food handlers there had strong knowledge, attitudes, and practices concerning safe food handling. However, many respondents lacked awareness about the proper storage of ready-to-eat foods, which could lead to cross-contamination if not properly managed (Sani, 2014).

In contrast, a study by Alemayehu et al. (2021) in Northern and Eastern Ethiopia, and India, found that 61.5% of food handlers didn't know that jewellery like rings and watches could contaminate food. This matches a study in Ireland by Moreb (2017), which showed that respondents had low knowledge of food handling (with only a 10% pass rate) and lacked awareness of food poisoning.

5.4 FOOD HANDLING PRACTICES IN THE ECD CENTRES

5.4.1 Hygiene practices

In the current study conducted in Sekhukhune district, Elias Motsoaledi municipality, 85.8% of respondents demonstrated good personal hygiene and maintained clean food preparation areas. These findings are similar to the study conducted in Gauteng by Nyawo, Kesa, and Onyenweaku (2021), which found that food handlers understood the importance of hygiene when handling food and followed proper hygiene practices during food preparation. Similarly, a study in KZN-Ntuzuma ECD centers by Shabangu (2022) revealed that food handlers

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exhibited a strong understanding of food safety practices and hygiene.

5.4.1.1. Hand washing

Almost all ECD centres (96.7%), the researcher observed food handlers frequently washing their hands before handling food and after using the toilet. Furthermore, 86.7% of ECD centres ensured that children washed their hands with soap before eating and monitored them to ensure proper hand washing. These findings align with a study by Nyawo, Kesa, and Onyenweaku (2021) in Gauteng, which showed that food handlers understood the importance of hygiene when directly handling food and followed proper hygiene practices. A similar observation was made in the KZN-Ntuzuma ECD centers study by Shabangu (2022), where food handlers demonstrated a high level of knowledge regarding food safety and hygiene practices.

5.4.1.2. Cleaning the kitchen

The researcher observed that all ECD centres visited had a kitchen to prepare food and the kitchen was separate from the eating, playing and storeroom. Furthermore, 90% of the ECD centres were observed cleaning their kitchen frequently before food preparation and when they are done serving food. A similar study conducted in KZN by Shabangu (2022) also reported that the food preparation areas were clean, no sanitization was practiced at most centres, and cleaning chemicals were available at most ECD centres. In a comparable study conducted in 15 ECD centers in Zimbabwe by Lewis (2022), kitchen facilities were generally well-maintained, with pests observed in only two centers (14.3%). Similarly, a study by Kabanda et al. (2017) in Ghana found that most food handlers recognized the importance of cleaning kitchen sink drains daily to ensure cleanliness and hygiene.

5.4.2 Food safety

The researcher observed all food handlers in the current study checking the condition and the use-by date of the food before preparing it. All ECD centers visited in the Sekhukhune District, Elias Motsoaledi Municipality, were equipped with refrigerators to store perishable and cooked food for preservation. Approximately 96.7% of food handlers removed their pieces of jewellery while preparing food. Similarly, a study in Gauteng by Nyawo, Kesa, and Onyenweaku (2021) found that food handlers stressed the importance of starting each day clean and wearing appropriate attire in the kitchen to prevent food contamination. However, Sibanyoni et al. (2017) reported that many food handlers in Mpumalanga lacked knowledge of proper food handling. In contrast, a study by Alemayehu et al. (2021) in Ethiopia found that only (53.7%)

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of food handlers followed safe food practices such as storing perishable food in the refrigerator, always checking the expiry date before preparing food and always adhering to personal hygiene, and a study in Debre Markos Town showed that only 34.1% had good food-handling knowledge.

These findings contrast with the study conducted in Gauteng by Nyawo, Kesa, and Onyenweaku (2021), which revealed that respondents lacked education on temperature control and proper food preservation methods. They appeared to be uninformed about the necessary temperatures for cooking and cooling food. Almost all (97.3%) food handlers in the current study wear aprons, caps, and disposable gloves when preparing food in the kitchen; food handlers with wounds or cuts stop touching food, immediately wash and bandage the wound, and use disposable gloves. This shows that they have decent food handling skills and ensure they prevent food contamination. This contrasts with the findings of the study by Nyawo, Kesa, and Onyenweaku (2021) in Gauteng, which indicated that respondents lacked knowledge about temperature control and proper food preservation techniques. They seemed unaware of the correct temperatures for cooking and cooling food.

A study by Akabanda et al. (2017) in Ghana found that food handlers were knowledgeable about proper food handling practices. Most understood the importance of wearing gloves, cleaning properly, and using detergent, but they didn't always follow strict food safety procedures. Similarly, a study in KZN by Shabangu (2022) showed that food handlers knew key food safety practices, such as keeping raw and cooked meat separate in the refrigerator.

5.5 MENU IN THE ECD CENTRES

All ECD centres in the current study had a daily menu and 91.2% were approved by the dieticians, while 8.8% were not approved. More than three-quarters of ECD centres (76.7%) had their menu displayed on the wall, but more than two-thirds of centres (68.3%) did not adhere to their daily menu. Lewis (2022) reported that all ECD centres in Zimbabwe displayed the menu on the wall and had low compliance with a planned menu. Lewis (2022) found that 73.3% of ECD centers only partially followed the daily menu displayed on the wall, often omitting or substituting food items. In a study in Zimbabwe's ECD centers, starchy foods were the most common, followed by meat, legumes, and nuts. While organ meat and eggs were not part of the planned menus, eggs were substituted for meat in one center on the day of the visit.

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According to Nzama and Napier (2017), the study's findings show that the menu served in the ECD centres in Inanda was nutritionally inadequate. Shabangu (2022) found that all ECD centers visited had daily menus with various food groups to support healthy diets. However, snacks were only provided during some visits. The study also showed that the ECD menus in KZN and Vhembe district, Limpopo, were inadequate, as they did not meet 60% of the daily nutrient requirements set by the Department of Social Services ECD guidelines (Shabangu, 2022).

In the current study, ECD centres receive funding from the Department of Basic Education. Most ECD centres reported that since they migrated from the Department of Social Development to the Department of Basic Education, they still need help adhering to the menu since they are adjusting to the new funds. Other ECD centres complained of insufficient funding and delays in receiving funds. Most ECD centres include expensive food items on the menu, and now they need help to adhere to them. Similarly, the study conducted in Vhembe district, Limpopo Province, by Mokone (2022) reported that the menu needs to be improved due to insufficient Funding. Furthermore, the menus needed to include various foods and meet children's daily needs due to financial constraints.

5.6 RESEARCHER'S OBSERVATIONAL CHECKLIST RESULTS

This part presents the results of the researcher's observations at the ECD centres. The observations focused on several key areas: the menu provided, the practitioners' food handling practices, and overall hygiene practices within the centres.

5.6.1 Displaying the menu

The researcher's observations in the current study revealed that 76.7% of ECD centres displayed their daily menus on the wall, which were clearly written and understandable. This practice aligns with the requirements set forth by Muller, Ronaasen, and Besada (2023), who stipulate that each ECD centre must display a daily menu visibly within their facility. Supporting this, a study by Lewis (2022) in Zimbabwe found that all observed ECD centres adhered to this practice by displaying clear and comprehensible menus.

5.6.2 Menu adherence

In the current study, researcher observed that (68.3%) of ECD centres did not serve the meal items specified in their menus on the day of the visit, while (31.7%) adhered to the planned

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menu. These findings are consistent with a similar study by Lewis (2022), which reported low compliance with planned menus across all ECD centres visited in Zimbabwe. Furthermore, 73.3% of the centres partially followed the displayed daily menu, often omitting or substituting some food items. Despite this, 91.7% of the ECD centres served food that was pleasing and acceptable to the children. All centres provided portions appropriate for young children and included vegetables in their meals. The researcher also noted that (75%) of ECD centres served food at the times specified in the menu, while (25%) served food either earlier or later than the scheduled times. Moreover, in the study conducted by Shabangu (2022), the results showed that all visited ECD centres had daily menus and menus with different food groups, including snacks, to ensure healthy dietary intake. However, no snacks were provided in all ECD visits.

The results of the study conducted by Shabangu (2022) show that ECD menus in KZN and Vhembe district in Limpopo were inadequate, as they did not meet 60% of the daily requirements of nutrients as recommended by the Department of Social Services ECD guidelines. Additionally, similar findings were reported by Nzama and Napier (2017), which show that the menu served in the ECD centres in Inanda is nutritionally inadequate. Kalender et al. (2023) highlight the importance of essential nutrition in preventing malnutrition, supporting immune function, reducing the risk of being underweight or obese, and lowering the likelihood of chronic health issues later in life. The study further stated that proper nutrition has a positive impact on memory, concentration, and learning behaviours (Kalinde et al., 2023). Meanwhile, Pinto et al. (2023) emphasized the importance of nutrition in a child's growth and development, especially on physical growth.

5.6.3 Food handling practices

5.6.3.1 Protective clothing

About 93.3% of food handlers wearing an apron in the kitchen, with their hair covered, wore no jewellery. The researcher observed that 60.0% of food handlers did not use gloves when handling or distributing unwrapped food; they practiced frequent hand washing before touching food. Despite this, Equivalent results were observed in the study conducted by Lewis (2022) in Zimbabwe ECD centres, which showed that the respondents had good knowledge about food contamination prevention by wearing suitable clothing.

5.6.3.2 Kitchen and Hygiene

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All ECD centres in the current study prepared their food in the kitchen. Furthermore, 90% of the ECD centres were cleaning their kitchen frequently during food preparation. Furthermore, the visited ECD centres had enough plates and spoons for each child, and after eating, the respondents were observed washing the plates and utensils with warm soapy water and storing them safely. All ECD centres were equipped with refrigerators for storing perishable food, and all perishable items were safely stored in these refrigerators. In Shabangu's (2022) study in KZN ECD centers, food handlers were seen washing and rinsing utensils between handling different foods using room-temperature water, but none sanitized the utensils. Similarly, Mwapasa et al. (2022) found that seven out of ten ECD centers in Blantyre, Malawi, had clean kitchens for food preparation. Lewis (2022) reported that 15 ECD centers in Zimbabwe had generally clean kitchen facilities, with pests found in only two (14.3%). In Ghana, Akabanda et al. (2017) found that most food handlers understood the importance of cleaning kitchen sink drains daily to maintain hygiene.

5.6.3.3 Feeding children below 6 months

Almost all food handlers (98.3%) assisted children with hand washing before and after meals, and they were observed feeding children who could not feed themselves. Approximately 53.3% of centres conducted plate waste assessments. The Nutrition Guidelines for Early Childhood Development Centres (Department of Health, 2016) state that children's nutritional needs increase as they grow.

5.6.4 Personal hygiene

5.6.4.1 Hand washing

Almost all ECD centres (96.7%), the researcher observed that respondents regularly washed their hands before handling food and after using the toilet. Food handlers also avoided touching their noses, ears, or other body parts during food preparation. Additionally, 86.7% of ECD centres made sure children washed their hands with soap before eating and supervised them to ensure proper hand washing. Similar results were found in a study by Nyawo, Kesa, and Onyenweaku (2021) in Gauteng, where food handlers followed hygiene practices like washing hands, covering hair, not wearing jewellery, and keeping nails clean and short.

Furthermore, food handlers in Gauteng Province confirmed that good hygiene practices guarantee the safety and cleanliness of food for ingestion and minimize the spread of bacteria (Nyawo et al., 2021). Shabangu (2022) made a similar observation in KZN ECD centres, where both children and practitioners demonstrated hygiene practices by washing hands after

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a visit to the toilet and before food preparation. In the study conducted in Zimbabwe ECD centres by Lewis (2022), the findings showed that 80% of food handlers practiced hand washing with soap before handling food.

In contrast, a study in Zimbabwe by Demberere et al. (2016) found that only 41.5% of food handlers washed their hands after helping children use the toilet, and 22.4% washed their hands after changing diapers, showing that most caregivers didn't follow good hygiene practices. Similarly, in Blantyre, Malawi, Mwapasa et al. (2022) found that none of the food handlers washed their hands with soap during food preparation. Instead, 44% washed with only water, while 56% didn't wash their hands at all.

5.7 LIMITATION OF THE STUDY

Observations and interviews were only made on one specific day and might not be a true reflection of how they prepare meals, and they might have changed how they do things because the researcher was on the premises. The study could not assess the nutritional content of the meal provided in the ECD centre; therefore, the results should be interpreted with caution. The sample in this study was restricted to only one municipality in Sekhukhune district; thus, the findings cannot be generalised to all municipalities in the district, but are likely to prevail in similar environments. Furthermore, the study was conducted in registered government and funded ECD centres, excluding other non-funded which might have given a better understanding of the variables measured. Children’s food preferences were not investigated in this study.

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CHAPTER 6: CONCLUSION AND RECOMMENDATIONS

6.1 INTRODUCTION

This chapter provides a summary of the key findings and recommendations of the study. The findings are aligned with the study's objectives. The aim of the study was to assess the nutritional knowledge, food handling practices of staff members, and the evaluation of menus in the ECD centres located in the Sekhukhune district, Elias Motsoaledi local municipality. The study's objectives included: assessing the nutrition knowledge of staff members through a knowledge test questionnaire, determining food handling practices in the ECD centres, and determining how well the food handler understands the daily menu. The researcher used a knowledge test questionnaire that helped in assessing the food handlers' knowledge about nutrition, food handling practices, and the daily menu.

6.2 CONCLUSION

The overall aim of the study was to determine nutritional knowledge, food handling practices of staff members and menu evaluation in the ECD centres in Sekhukhune district, Elias Motsoaledi local municipality. A summation of the findings in conjunction with the objectives is presented below to determine the impact of the study.

6.2.1 Objective 1-Assessment of nutrition knowledge of staff members in the ECD centres in Sekhukhune District, Elias Motsoaledi local municipality.

The majority of food handlers had outstanding knowledge about nutrition but they reported that they were never trained on nutrition; however they reported that they rely on the educational information they receive from local radios, Television, social media platforms, health care workers, and their general knowledge. Majority of food handlers further reported that they also rely on the general knowledge they obtained from their household. The researcher was able to assess the nutrition knowledge of staff members in the ECD centres in Sekhukhune District, Elias Motsoaledi local municipality.

6.2.2 Objective 2- Determining food handling practices in the ECD centres

The findings of the study showed that food handlers in Sekhukhune District, Elias Motsoaledi municipality have outstanding food handling practices. The researcher observed food handlers practicing good hygiene. Food handlers wear appropriately in the kitchen and always covered their head. Both children and all staff members wash their hands frequently to prevent infections and food contamination. All ECD centres visited in Sekhukhune District, Elias

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Motsoaledi Municipality have refrigerators to store perishable and cooked food for food preservation.

Furthermore majority of food handlers removes their jewelleries whenever they are preparing food to prevent food contamination. Children were dished up food sizes or portions appropriate for their age. This shows that they understand that a child cannot eat like an adult. Overall the findings of the current study show that Sekhukhune ECD food handlers have good food handling practices.

6.2.3 Objective 3- To determine menu availability in the ECD Centres at Sekhukhune District, Elias Motsoaledi Local Municipality.

The majority of ECD centres in the current study had a daily menu approved by a nutrition expert. However, the majority of ECD centre did not adhere to the daily menu and they did not follow the menu when preparing a meal of the day. Menu was displayed on the wall in majority of ECD centre. The ECD centres receive funding from the Department of Basic Education. Majority of ECD centres reported that since they migrated from the Department of Social Development to the Department of Basic Education, they are still struggling to adhere to their menu since they are still adjusting to the new funds and other ECD centres complained of insufficient and delay of funding. Most ECD centre included expensive things in the menu and now they are struggling to adhere to it. Minority of ECD centre in Sekhukhune district, Elias Motsoaledi local municipality adheres to their daily menu.

In addition, ECD centres in Elias Motsoaledi local municipality (96.7%) admit children aged 0-5 years, in contrast, a smaller number of centres admit children in the age ranges of 1-5 years and 2-5 years. Most food handlers in Elias Motsoaledi Local Municipality had outstanding knowledge about nutrition but reported that they were never trained on nutrition. However, the food handlers reported that they rely on the educational information they receive from local radios, television, social media platforms, health care workers, and their general knowledge obtained from their household. The results of the current study show that food handlers had good food handling practices and wear appropriately in the kitchen and always covered their head. The researcher observed that children and food handlers wash their hands regularly after visiting the toilet and before touching foods to prevent infections and food contamination. In addition, the food handlers remove jewellery when preparing food as part of good hygiene practices. The ECD centres had refrigerators to store perishable and cooked food. Children were given appropriate portion sizes. This shows that they understand that a child cannot eat like an adult. Overall, the current study's findings show that ECD centre's food handlers have good food-handling practices.

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All ECD centres had a menu, while the majority displayed it on the wall, while the other ECD centres had it in a file. The nutrition expert assisted ECD centres in developing a daily menu. However, most ECD centres did not adhere to the daily menu when preparing a meal; they cooked or served what was not on the menu on the day of the visit. The ECD centres migrated from the Department of Social Development to the Department of Basic Education in April 2022. The Department of Basic Education funds ECDs as part of government subsidies. Most ECD centres reported that since they migrated from the DSD to DBE, they are still struggling to adhere to their menu while adjusting to the new funding model. In addition, the ECD centre reported insufficient funding, and the DBE delayed paying money, making it challenging to adhere to the daily menu. On the other hand, food prices contributed to non-adherence to the daily menu.

6.3 RECOMMENDATIONS

Based on the findings of the study, the researcher recommends that:

- The Department of Basic Education ensures that practitioners receive training on the Nutrition Programme and participate in ongoing professional development in early childhood education and program management.
- Training programmes on nutrition and food handling should be implemented in order to provide the knowledge and skills needed for child development. The trainings are relevant for all ECD practitioners but should prioritise the food handlers. The topics to be included in the training program should include nutrition, food handling practices and menu adherence.
- Practitioners in the ECD centres should have at least the minimum requirement which is the registered Basic Certificate in ECD NQF Level 1 of the South African Qualifications Authority, therefore ECD centres need to have criteria for appointment, and only appoint qualified people.
- The Department of Basic Education together with other health care workers must continue monitoring the ECD centres to ensure that the centres meet the departmental norms and standards and that the nutrition experts approved daily menus and the centre always adhere to the menu.
- The nutrition experts should assist food handlers in order to incorporate the local and Indigenous foods in their daily menu. The ECD centre should display their menu on the wall for easy access and use by food handlers.
- It is recommended that ECD centre consider establishing vegetable garden in the premise which can assist in reducing cost of meals. The vegetable garden can assist with dietary

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diversity in the ECD centre menu which will assist in improving micronutrient status of children.

- Future research should focus on other municipalities, including both funded and non-funded ECD centres. The study should assess nutritional status of children in the ECD centres, focusing in anthropometric (weight, height, mid-upper arm circumference) and biochemical status (vitamin A, Iron, and zinc).

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APPENDICES/ANNEXURES

Appendix A: RESEARCH QUESTIONNAIRE

NUTRITION KNOWLEDGE QUESTIONNAIRE

Duration: 2 Hour

TITLE: DETERMINATION OF MENU AVAILABILITY, FOOD SERVICE PRACTICES AND NUTRITION KNOWLEDGE OF STAFF MEMBERS IN THE ECD CENTERS IN SEKHUKHUNE DISTRICT

SECTION A: SOCIO-DEMOGRAPHIC INFORMATION

INSTRUCTION: choose your most appropriate option or provide the most appropriate description based on your knowledge.

A1. Which category below includes your age?

0-18	19-35	36-60	61 and above

A 2. What is your gender?

Female	Male	Other (specify)……

A3. What is your race?

Black	White	Indian	Other (specify)

A4. Are you married?

Single	Married	Widowed	Divorced	Separated	Never married

A5. What is the highest level of education you have completed or received?

Less than high school qualification	High school qualification/ equivalent	College or university qualification

Instruction: Answer Yes or No from the question below.

A6. Is the ECD centre registered with the Department of Social Development? **Yes/No**

A7. Do you receive funding from the Department of social development? **Yes /No**

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A8. Do you have a daily menu for the ECD centre? **Yes/No** if yes provide the copy of the menu.

A9. Was the menu planned by the nutritionist or dietician? **Yes/No**

A10. Is there a separate area used for food preparations? **Yes/No**, if yes specify.

A11. Have you ever received any food safety training? **Yes/No**, if yes when did the training take place?

SECTION B: ASSESSMENT OF MENU, HYGIENE PRACTICES AND NUTRITION KNOWLEDGE OF STAFF MEMBERS IN THE ECD.

Instruction: Choose your appropriate option from the Likert Scale below.

	Strongly agreed	**Agree**	**Disagree**	**Strongly disagree**
B1. Food safety and hygienic practices are important aspects in food handling practices, to prevent food contamination and food borne illnesses.	1	2	3	4
B2. Thorough hand washing is important and necessary after every toilet visit.	1	2	3	4
B3. Menu must always be adhered to.	1	2	3	4
B4. Raw and cooked foods should be stored separately to reduce the risk of food contamination.	1	2	3	4

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B5. It is not compulsory to wear protective clothing such as apron and cap while preparing food.	1	2	3	4
B6. Nutrient intake in children is important for optimal health, growth and development.	1	2	3	4
B7. Provision of a fruit per day plays an important role in the health and development of children.	1	2	3	4
B8. The human body gets energy from food.	1	2	3	4
B9. Children under 6-month-old should be given solid food.	1	2	3	4
B10. Nails of food handlers must be short and clean	1	2	3	4
B11. Protein, carbohydrates, and fats are not needed for the child's development and health.	1	2	3	4
B12. Rice and potato are starchy food with similar nutritional values and a similar number of calories per serving.	1	2	3	4

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B13. Children are forced to eat food even though they are allergic.	1	2	3	4

SECTION C: ASSESSMENT OF NUTRITION KNOWLEDGE ON STAFF MEMBERS.

INSTRUCTIONS: Answer YES/NO

QUESTIONS	YES	NO
C1. To ensure a balanced diet/ nutrient intake we do not repeat a meal, but we cook different meals every day guided by the menu?		
C2. Does the intake of a balanced nutrient have an impact on child educational performances?		
C3. A meal must include more than one food from the same food group e.g. serving potato and rice in the same dish?		
C4. Food served in the ECD centre should be nutritious and exclude processed food high in fat, sugar and salt?		
C5. Is there safe drinking water every day?		
C6. Do you sit with children while they are eating and actively feed the younger ones?		
C7. Have the children given at least one snack from the past 2 days? Specify…….		
C8. Are children given the size/portion of food equal to their age? Identify from the food scale provided……..		

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SECTION D: HYGIENE PRACTICES ASSESSMENT

INSTRUCTION: CHOOSE THE CORRECT ANSWER

D1. Where do you prepare the food?

- ➢ In the kitchen
- ➢ Outside in an open space
- ➢ In the classroom
- ➢ Other(specify)

D2. How often do you clean the kitchen?

- ➢ Once in a week
- ➢ Three times a week
- ➢ Everyday
- ➢ Other (specify)

D3. What do you use to clean baby feeding bottles or cups?

- ➢ Brush
- ➢ Steel wool
- ➢ Dishcloth
- ➢ Other(specify)

D4. How often do you clean the utensils and plates of the kids?

- ➢ After use
- ➢ Before and after use every day
- ➢ Only if they are dirty
- ➢ Other (specify)

D5. When do you advise children to wash their hands?

- ➢ On their arrival to the ECD
- ➢ Before they eat and on their return from toilets.
- ➢ Both
- ➢ Other (specify)

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D6. When do you cover your head?

- ➢ Every time
- ➢ Sometimes
- ➢ When preparing food and distributing food to children.
- ➢ Never

D7. How often do you check the expiry date on food?

- ➢ On the date of purchase or delivery
- ➢ Before cooking
- ➢ Sometimes
- ➢ Never

D8. What do you use to wash hands?

- ➢ Plain Water
- ➢ Sanitizer
- ➢ Dishwashing soap

D9. When do you wash your hands?

- ➢ Before handling food
- ➢ After handling food
- ➢ In between preparation
- ➢ When serving food to the child

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Appendix B: THE RESEARCHER'S OBSERVATION CHECKLIST

Duration: 3 hours

A) Menu evaluation in the ECD centre

Menu evaluation.	Yes	No	Comments
1. Is the menu displayed on the kitchen wall?			
2. During the day of the visit, did they serve what was displayed on the menu, for that day?			
3. Does the daily menu contain essential nutrients needed for children, protein, carbohydrates, fats, etc.?			
4. Does the menu include all meals needed for the child per day, breakfast, lunch, snacks?			
5. Is the menu clear and understandable?			
6. Does the ECD centre provide to children other foods which are not included in the daily menu?			
7. Is every food indicated in the menu available on the plate served during the day of the visit?			
8. Are the combinations of foods pleasing and acceptable to children?			
9. Does the menu reduce the number of fats, sodium and sugar?			
10. Does the menu include all components of the meal?			
11. Does the menu included other foods to help meet the nutritional needs of young children and to satisfy their appetites?			
12. Does the menu include foods high in vitamin A, vitamin C, and iron?			
13. Does the menu include different kinds or forms of foods (fresh, canned, dried)?			
14. Does the menu include seasonal foods?			

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15.Do meals include a good balance of:	Yes	No	
15.1. Colour--in the foods themselves or as a garnish?			
15.2. Texture--soft, crisp, firm-textured?			
15.3. Shape-different-sized pieces and shapes of foods?			
15.4. Flavour--bland and tart or milk and strongly flavoured foods?			
15.5. Temperature--hot and cold foods?			
16. Are serving sizes sufficient to provide young children with the required quantity of	Yes	No	
16.1. Meat and/or meat alternate?			
16.2. Two or more vegetables and/or fruits?			
16.3. Enriched or whole-grain bread or an equivalent?			
16.4. Fluid milk?			

B) Food handling practices in the ECD centre

17. Do food handlers use gloves when touching or distributing unwrapped food?			
18. Do food handlers always wear face masks and cover their heads when touching or distributing foods?			
19. Is there a kitchen to prepare food?			
20. Is the kitchen separated from the eating, playing and storeroom?			
21. Does the meal given to children contain vegetables?			
22. During food preparation do the staff members who are preparing food cover their head and wears aprons.			
23. Do children wash their hands before eating?			
24. Are the utensils clean and stored safely?			
25. Is there a refrigerator in the ECD centre?			

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26. Are all perishable foods stored in the refrigerator?			
27. Do staff members help to feed children who cannot feed themselves?			
28. Are all fruits or vegetables washed before they are given to children?			
29. Are children who are unable to wash their hands helped by the staff members.			
30. Do the food handlers conduct plate waste assessment?			
31. Is there running water on the premises, if no are the buckets carrying water clean?			
32. Does the ECD centre have the food inventory list?			
33. Do they feed children at a required time stated on the menu?			
34. Do they provide fruit for children every day?			
35.Are children who are 6 months and below, only given milk appropriate to their age?			
36. Are there enough plates and utensils for each child in the ECD Centre?			
37. Is the kitchen area cleaned frequently?			
38. Do food handlers check the use-by dates of food products before using them?			
39. Do food handlers remove their hands' jewellery when preparing food?			

C) Personal Hygiene Checklist.

40. Do food handlers control contamination by washing their hands regularly and avoiding touching already prepared food with bare hands?			
41. Do food handlers avoid touching nose, ears, or their			

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body during food preparation?			
42. Is the kitchen used to prepare food clean?			
43. Do the food handlers wash hands before serving to children?			
44. Do children wash their hands before they eat?			
45. Do both children and food handlers use water with soap to wash their hands?			
46. Do food handlers wash their hands during the preparation of food?			
47. Are the children monitored if they are washing their hands properly?			
48. Are the staff members neat?			
49. Is there a chopping board in the kitchen?			
50. Are the chopping boards washed before and after preparation with detergent soap and hot water to avoid contamination?			
51. Are all kitchen equipment's, including the plates and utensils, washed with detergent soap and hot water?			

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Appendix C: PAPETLANA YA DIPOTSISO

Ketsheletso A: Nutrition Knowledge Questionnaire

Nako: Diiri tse pedi

TITLE: DETERMINATION OF MENU AVAILABILITY, FOOD SERVICE PRACTICES AND NUTRITION KNOWLEDGE OF STAFF MEMBERS IN THE ECD CENTERS IN SEKHUKHUNE DISTRICT

Karolo A: SOCIO-DEMOGRAPHIC INFORMATION

Taetso: Dira kgetho ya maleba go tswa go papetla yeo o e filwego.

A1. Ke lefapha le lefe la mengwaga leo o welang go lona go tswa go yeo e latelago?

0-18	19-35	36-60	61 goya godimo

A 2. Bong bja gago ke bofe?

Mosadi	Monna	Tse dingwe (hlalosa)……

A3. O mohlobo mang?

Mosotho	Lekgowa	MoIndia	Tse dingwe (hlalosa)…..

A4. O Nyetswe?

A ka nyalwa	Ke nyetswe	Ke mohlologadi	Ke Hladilwe	Re ahlogane

A5. Ke maemo afe a godimo a thuto yeo o e fihleletsego?

Ka fase ga sekolo seo se phagamego	Sekolong sa go phagama	Kholetseng goba unibesithi

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Taetso: Araba ka Ee goba Aowa go dipotsiso tsa ka fase.

A6. Na senthara ya ECD ya Lena e ingwadisitse le Kgoro ya tsa bobotlana (Social Development)? **Ee/Aowa**.

A7. Ekaba o hwetsa maseleng go tswa go kgoro ya tsa bobotlana? **Ee /Aowa**

A8. Nna le na le menu ya dijo ka letsatsi ka letsatsi mo senthareng ya lena? **Ee/ Aowa,** gee le Ee tlisa bohlatse (menu).

A9. Naa e kaba dijo tseo mo go menu di beakantswe ke balekodi la bahlokomedi ba dijo? **Ee/Aowa**

A10. E kaba go na le lefelo la go apiela dijo tseo? **Ee/Aowa**, Ge e le Ee hlalosa…….....

A11. E kaba oile wa hwetsa thuto/ hlahlo ya go sireletsa le go hlokomela dijo? **Ee/Aowa**, gee le Ee o e hweditse neng?

…….

KAROLO B: ASSESSMENT OF MENU, HYGIENE PRACTICES AND NUTRITION KNOWLEDGE OF STAFF MEMBERS IN THE ECD.

Taetso: Dira kgetho ya maleba go tswa go papetla yeo o e filwego.

	Go dumela kudu	**Kea dumela**	**Kea gana**	**Ke gana kudu**
B1. Hlokomelo ya dijo le maphelo di thibela go bola ga dijo le malwetsi.	1	2	3	4
B2. Go bohlokwa go hlapa matsogo geo boa ntlwaneng ya boithomelo.	1	2	3	4
B3. Menu o tswanetswe o latelelwa nako tsohle.	1	2	3	4
B4. Dijo tsa go butswa le tsa botala di bewa mafelo a go	1	2	3	4

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fapana go thibela go fetetsana.

B5. Ase gapeletso go apara dikobo tsa tshireletso bjalo ka theto le dikepisi geo apea.	1	2	3	4
B6. Goja difepa mmele go bohlokwa baneng ka phepo le go gola ga botse.	1	2	3	4
B7. Go ja dienywa ga tee ka letsatsi go dira gore ban aba phelele go gola gabotse.	1	2	3	4
B8. Mmele wa motho o tsea maatla go tswa dijong.	1	2	3	4
B9. Bana ba dikgwedi tsa fase ga 6 ba swanetse go fiwa dijo tsa bothata.	1	2	3	4
B10. Dinala tsa bao ba tswarago dijo di swanetse go bat se kopana le go hlweka.	1	2	3	4
B11. Diprotein, khabohaedrate le makhura ga tsa loka go godisa ngwana.	1	2	3	4
B12. Raese le Dipotata di na le starch dia swana.	1	2	3	4
B13. Bana ba swanetse go ja dijo le ge di ba fa malwetse.	1	2	3	4

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KAROLO C: ASSESSMENT OF NUTRITION KNOWLEDGE ON STAFF MEMBERS.

TAELO: Araba Ka Ee goba Aowa

DIPOTSISO	Ee	Aowa
C1. Gore re hwetse phepo ye kaone, ga re boeletse sejo se tee gantsi empa re apea dijo tsa go fapana re laola ke menu re nang le yona?		
C2. Naa go fa ngwana dijo tsa phepo go na le seabe dithutong tsa gagwe?		
C3. Dijo di swanetse go ba le mehuta ya go feta o tee go tswa sehlopheng sa go swana sebjalo ka potato le raese ka sebjaneng se tee?		
C4. Dijo tseo di abiwang ECD di swanetse go ba le phepo le gona di se be le makhura, swikiri goba letswai le lentshi?		
C5. Naa go na le metse a loketseng go nwiwa ka mo senthareng ya lena letsatsi ka letsatsi?		
C6. Naa le kgona go dula le bana ba bannyane ge ba eja la ba jesa?		
C7. Naa o kaba o kgonne go fa bana disenekenyana mo matsatsing amabedi a go feta? Ge e le Ee, o ba fele eng …….		
C8. Naa e kaba ban aba fiwa tekantsho ya maleba ya dijo go ya ka mengwaga ya bona? Bontsha tekantsho yeo go tseo o difilwego……..		

KAROLO D: TEKOLO YA PHETHAGATSO YA TSA MAPHELO

DITAELO: KGETHA KARABO YA MALEBA.

D1. Naa o apea dijo kae?

- ➢ Ka Khitshing
- ➢ Ka ntle
- ➢ Ka phaphosing
- ➢ Go ba kae (Hlalosa)……..

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D2. Naa o hlwekisa khitshi ya gago ga kae?

- Ga tee ka beke
- Ga raro ka beke
- Letsatsi ka letsatsi
- Ye nngwe (hlalosa)……

D3. Naa o somisa eng go hlwekisa mabotlelo le dikomikana tsa go fepa bana?

- porase
- Seteelwool
- Masela a dibjana
- Goba eng (specify)……..

D4. Naa le hlwatsa dibjana le dikotlolo tsa bana neng?

- Ge le fetsa go di somisha.
- Pele le ge re fetsa go di somisa letsatsi ka letsatsi
- Ge fela di na le ditshila.
- Goba byang (hlalosa)…….

D5. Naa le eletsa bana go hlapa matsogo neng?

- Ge ba fihla ka senthareng.
- Pele ba eja le ge ba boa botswelamare.
- Ka moka ke tsona
- Ye nngwe (hlalosa)……..

D6. Naa o khupetsa hlogo neng?

- Ka nako tsohle

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- Ka nako ye nngwe
- Ge ke dira dijo le ge ke efa bana dijo.
- Ga nke ke khupetsa hlogo.

D7. Naa ke ga kae mo o felang o lekola dijo tsa go fetwa ke nako?

- Ge ke reka gob age di fihla.
- Pele nka di apea.
- Ka nako ye nngwe.
- Ga nke ke e lebelela.

D8. What do you use to wash hands?

- Meetse fela.
- Sebolayaditwatsi.
- Sesepa sa dibjana.

D9. O hlapa neng Matsogo?

- Pele ke swara dijo.
- Ge ke fetsa go swara dijo.
- Ge ke ntsi ke dira dijo.
- Ge ke lesa ngwana.

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Appendix D: UNIVEN Informed Consent information sheet



RESEARCH ETHICS COMMITTEE

APPENDIX D: UNIVEN Informed Consent information sheet

LETTER OF INFORMATION

Title of the Research Study: Determination of menu availability, food handling practices and nutrition knowledge of staff members in the ECD centres at Elias Motsoaledi Local Municipality, Limpopo Province.

Principal Investigator/s/ researcher: Mphagi Thabelo Winnie

Qualifications: Bachelor of Arts in Social Work

Supervisor: Dr Mushaphi L.F

Qualifications:

Co-supervisor: Chauke RC

Qualifications:

Brief Introduction and Purpose of the Study: the study is about the determination of menu availability, food service practice and nutrition knowledge of food handlers in the ECD centres in Elias Motsoaledi municipality, Limpopo province. The purpose of the study is to determine menu availability in the ECD centres, to determine food service practices in the ECD centres in and to assess the nutrition knowledge of food handlers in the ECD centres in Elias Motsoaledi municipality, Limpopo province using knowledge test questionnaire.

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Outline of the Procedures: during data collection, the researcher will visit the selected sample to collect data. The researcher will use the knowledge questionnaire, and menu evaluation checklist to collect data. Instruments will be translated from English to Sepedi for the respondents to understand the contents. The researcher will explain the instruments to the respondents and those who understand will be given to answer on their own, and the researcher will use the researcher administration method to collect data. The researcher will be available for consultation and clarification where they do not understand. The inclusion criteria will be all food handlers working in ECD centres in Elias Motsoaledi Local Municipality, who are willing to participate and have signed the consent forms, will be included in the study. Both males and females staff members who signed the consent form will be included in the study.

The exclusion criteria will be all food handlers who did not sign the consent form and those who will not be available on the day of data collection will be excluded from the study, and all food handlers who does not engaged in any of the processes which make up, or are ancillary to food processing (e.g. buying groceries, cooking/ preparing food, serving food to children, cleaning and sanitation).

Risks or Discomforts to the respondents: the researcher will use the researcher administration method for those who might feel lazy to read the instrument and to fill in the answers. The researcher will be available to assist those who are unable to read and write but who are willing to form part of the study.

Benefits: The results of this study will contribute to the body of knowledge. It will also help to improve the menu in the Early Childhood Development centres, and this will improve on the nutrient intake of children. This study will also help to describe the knowledge which staff members in the ECD centres have on nutrition, this will help the Department of Social Development and the Department of Education to know the kind of training which staff members in the ECD centres needs and it will also direct them on where or how to improve on their training.

Reason/s why the respondents May Be Withdrawn from the Study: no respondents will be forced to participate in the study. All respondents who will decide to withdraw from the study will be free to do so. It will be explained to the respondents that they are free to withdraw.

Remuneration: the respondents will not be paid for being part of the study and this will be explained to them before data collection so that they do not expect any remuneration from the researcher.

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Costs of the Study: the respondents will not be expected to cover any costs of the study, such as making copies of the instruments, and travelling to meet the researcher.

Confidentiality: To maintain confidentiality the researcher will not record the personal details such as names and Identity numbers of respondents in the questionnaire. Their information will not be disclosed to other respondents. This will be clarified to the respondents so that they know that their information and responses are safe and will not harm them.

Research-related Injury: the researcher will make sure that no harm happens to the respondents .

Persons to Contact in the Event of Any Problems or Queries:

Please contact the researcher Mphagi TW on 081 8392 372, Supervisor Dr Mushaphi on 082 444 7326, Co-supervisor Chauke RC on 073 380 9695 or the University Research Ethics

Committee Secretariat on 015 962 9058. Complaints can be reported to the Director: Research and Innovation, Prof GE Ekosse on 015 962 8313 or Georges

Ivo.Ekosse@univen.ac.za

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APPENDIX E: CONSENT FORM

Statement of Agreement to Participate in the Research Study:

•I hereby confirm that I have been informed by the researcher, (Mphagi T.W), about the nature, conduct, benefits and risks of this study - Research Ethics Clearance Number: SHS/21/NUT/05/0511

•I have also received, understood the above-written information (Respondents Letter of Information) regarding the study.

•I am aware that the results of the study, including personal details regarding my sex, age, date of birth, initials and diagnosis will be anonymously processed into a study report.

•Given the requirements of research, I agree that the data collected during this study can be processed in a computerized system by the researcher.

•I may, at any stage, without prejudice, withdraw my consent and participation in the study.

•I have had sufficient opportunity to ask questions and (of my own free will) declare myself prepared to participate in the study.

•I understand that significant new findings developed during this research which may relate to my participation will be made available to me.

Full Name of Participant	Date	Time	Signature
, ……	……	……	……..

I, Mphagi T.W herewith confirm that the above respondents has been fully informed about the nature, conduct and risks of the above study.

Full Name of Researcher

Mphagi T.W Signature 

Full Name of Witness (If applicable

signature……date……..

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APPENDIX F: LETTERS TO REQUEST PERMISSION

University of Venda

The manager

Sekhukhune District

Lebowakgomo

REQUEST FOR PERMISSION TO CONDUCT RESEARCH IN THE ECD CENTRES IN ELIAS MOTSOALEDI LOCAL MUNICIPALITY IN SEKHUKHUNE DISTRICT IN LIMPOPO PROVINCE.

Dear Sir/Madam

I am Mphagi Thabelo Winnie, and I am a Public Nutrition student at the University of Venda.

I request to conduct a study for my master's degree which involves the determination of menu availability, food handling practices and nutrition knowledge of staff members in the ECD centres. This project will be conducted under the supervision of Dr L.F Mushaphi and the Co-supervisor Dr R. C Chauke. I hereby seek your consent to conduct research in the ECD centres at Elias Motsoaledi Local Municipality.

Upon completion of the study, I undertake to provide the Department of Social Development with a bound copy of the full research report. If you require any further information, please do not hesitate to contact me on cell phone no. 081 8392 372 and email address **winnie.mphadi@gmail.com**.

Thank you for your time and consideration in this matter.

Your positive response in this regard will be appreciated.

Yours Faithfully

Mphagi T. W

University of Venda student

Signature: 

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The Principal

Elias Motsoaledi ECD centres

……

REQUEST FOR PERMISSION TO CONDUCT A RESEARCH IN THE ECD CENTER.

Dear Sir /Madam

My name is Mphagi Thabelo Winnie, and I am a Public Nutrition student at the University of Venda. I kindly request to conduct a research for my master's degree in your organization. The study involves the determination of menu availability, food handling practices and nutrition knowledge of staff members in the ECD centres in Elias Motsoaledi Local Municipality. This project will be under the supervision of Dr L. F Mushaphi and the Co-supervisor Dr R. C Chauke from the University of Venda. The findings of this study will be for academic purposes only.

A bound copy of the full research report will be submitted to the Department of Social Development. If you request any further information, please do not hesitate to contact me on cell phone no. 081 8392 372 and email address **winnie.mphadi@gmail.com**.

Your positive response in this regard will be highly appreciated

Yours sincerely

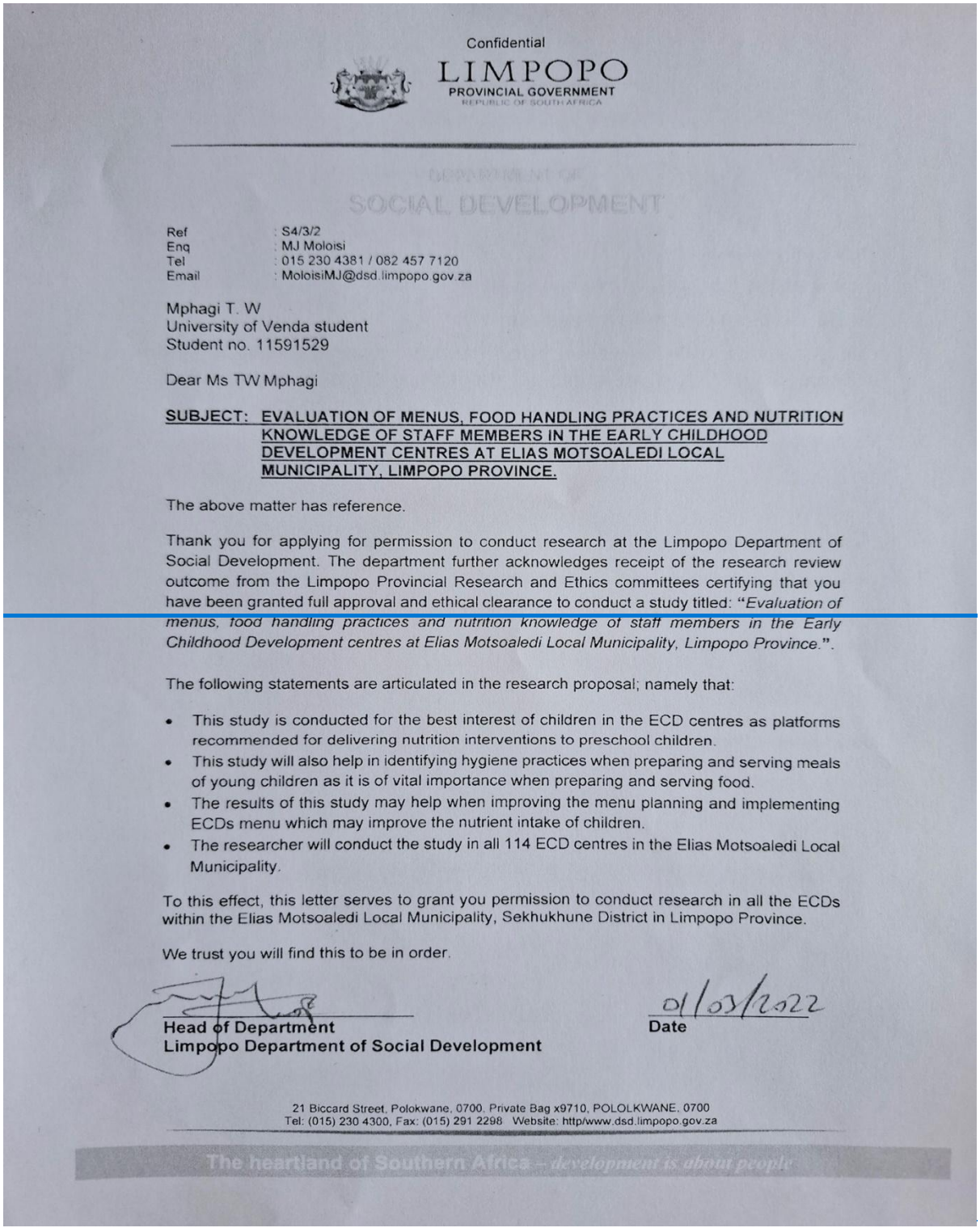
Mphagi T.W

University of Venda student

Signature: 

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APPENDIX G: PERMISSION LETTER



Confidential

LIMPOPO
PROVINCIAL GOVERNMENT
REPUBLIC OF SOUTH AFRICA

DEPARTMENT OF
SOCIAL DEVELOPMENT

Ref : S4/3/2
Enq : MJ Moloisi
Tel : 015 230 4381 / 082 457 7120
Email : MoloisiMJ@dsd.limpopo.gov.za

Mphagi T. W
University of Venda student
Student no. 11591529

Dear Ms TW Mphagi

SUBJECT: EVALUATION OF MENUS, FOOD HANDLING PRACTICES AND NUTRITION KNOWLEDGE OF STAFF MEMBERS IN THE EARLY CHILDHOOD DEVELOPMENT CENTRES AT ELIAS MOTSOALEDI LOCAL MUNICIPALITY, LIMPOPO PROVINCE.

The above matter has reference.

Thank you for applying for permission to conduct research at the Limpopo Department of Social Development. The department further acknowledges receipt of the research review outcome from the Limpopo Provincial Research and Ethics committees certifying that you have been granted full approval and ethical clearance to conduct a study titled: "*Evaluation of menus, food handling practices and nutrition knowledge of staff members in the Early Childhood Development centres at Elias Motsoaledi Local Municipality, Limpopo Province.*".

The following statements are articulated in the research proposal; namely that:

- This study is conducted for the best interest of children in the ECD centres as platforms recommended for delivering nutrition interventions to preschool children.
- This study will also help in identifying hygiene practices when preparing and serving meals of young children as it is of vital importance when preparing and serving food.
- The results of this study may help when improving the menu planning and implementing ECDs menu which may improve the nutrient intake of children.
- The researcher will conduct the study in all 114 ECD centres in the Elias Motsoaledi Local Municipality.

To this effect, this letter serves to grant you permission to conduct research in all the ECDs within the Elias Motsoaledi Local Municipality, Sekhukhune District in Limpopo Province.

We trust you will find this to be in order.

Head of Department
Limpopo Department of Social Development

01/03/2022
Date

21 Biccard Street, Polokwane, 0700. Private Bag x9710, POLOLKWANE, 0700
Tel: (015) 230 4300, Fax: (015) 291 2298 Website: http/www.dsd.limpopo.gov.za

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LIMPOPO
PROVINCIAL GOVERNMENT
REPUBLIC OF SOUTH AFRICA

OFFICE OF THE PREMIER

TO: MR MJ MOLOISI

FROM: DR T MABILA

CHAIRPERSON: LIMPOPO PROVINCIAL RESEARCH COMMITTEE (LPRC)

ONLINE REVIEW DATE: 10th - 17th FEBRUARY 2022

SUBJECT: EVALUATION OF MENUS, FOOD HANDLING PRACTICES AND NUTRITION KNOWLEDGE OF STAFF MEMBERS IN THE EARLY CHILDHOOD DEVELOPMENT CENTRES AT ELIAS MOTSOALEDI LOCAL MUNICIPALITY, LIMPOPO PROVINCE.

RESEARCHER: MPHAGI TW

Dear Colleague

The above researcher's research proposal served at the Limpopo Provincial Research Committee (LPRC). The committee is satisfied with the ethical soundness of the proposed study.

Decision: The research proposal is granted approval

Regards

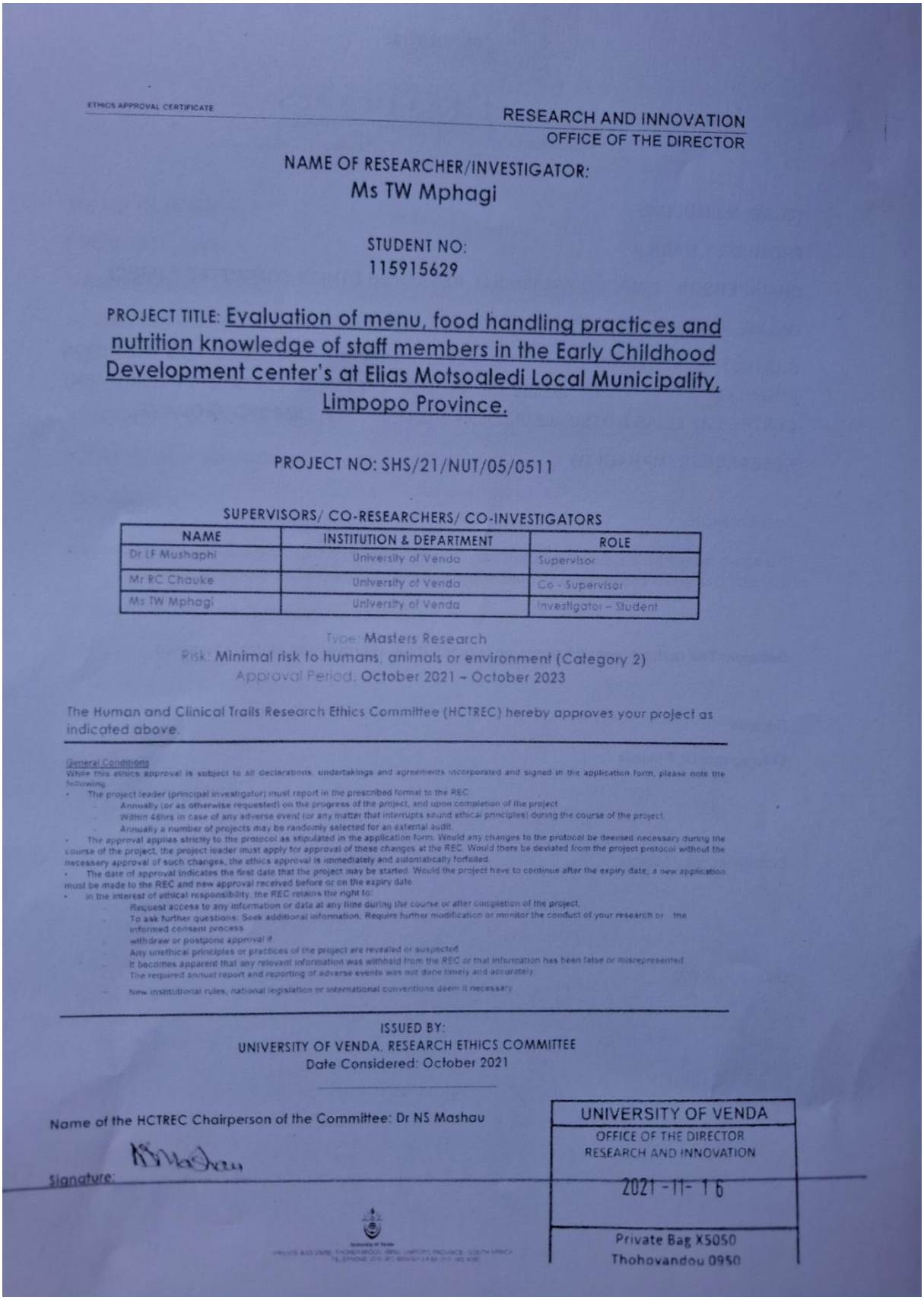
Acting Chairperson: Dr T Mabila

Secretariat: Ms J Mokobi

Date: 23/02/2022

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APPENDIX H: ETHICS CERTIFICATE



ETHICS APPROVAL CERTIFICATE

RESEARCH AND INNOVATION
OFFICE OF THE DIRECTOR

NAME OF RESEARCHER/INVESTIGATOR:
Ms TW Mphagi

STUDENT NO:
115915629

PROJECT TITLE: Evaluation of menu, food handling practices and nutrition knowledge of staff members in the Early Childhood Development center's at Elias Motsoaledi Local Municipality, Limpopo Province.

PROJECT NO: SHS/21/NUT/05/0511

SUPERVISORS/ CO-RESEARCHERS/ CO-INVESTIGATORS

NAME	INSTITUTION & DEPARTMENT	ROLE
Dr LF Mushaphi	University of Venda	Supervisor
Mr RC Chauke	University of Venda	Co - Supervisor
Ms TW Mphagi	University of Venda	Investigator – Student

Type: Masters Research
Risk: Minimal risk to humans, animals or environment (Category 2)
Approval Period: October 2021 – October 2023

The Human and Clinical Trails Research Ethics Committee (HCTREC) hereby approves your project as indicated above.

General Conditions
While this ethics approval is subject to all declarations, undertakings and agreements incorporated and signed in the application form, please note the following:

- The project leader (principal investigator) must report in the prescribed format to the REC:
  - Annually (or as otherwise requested) on the progress of the project, and upon completion of the project.
  - Within 48hrs in case of any adverse event (or any matter that interrupts sound ethical principles) during the course of the project.
  - Annually a number of projects may be randomly selected for an external audit.
- The approval applies strictly to the protocol as stipulated in the application form. Would any changes to the protocol be deemed necessary during the course of the project, the project leader must apply for approval of these changes at the REC. Would there be deviated from the project protocol without the necessary approval of such changes, the ethics approval is immediately and automatically forfeited.
- The date of approval indicates the first date that the project may be started. Would the project have to continue after the expiry date, a new application must be made to the REC and new approval received before or on the expiry date.
- In the interest of ethical responsibility, the REC retains the right to:
  - Request access to any information or data at any time during the course or after completion of the project.
  - To ask further questions; Seek additional information; Require further modification or monitor the conduct of your research or the informed consent process.
  - withdraw or postpone approval if:
  - Any unethical principles or practices of the project are revealed or suspected.
  - It becomes apparent that any relevant information was withheld from the REC or that information has been false or misrepresented.
  - The required annual report and reporting of adverse events was not done timely and accurately.
  - New institutional rules, national legislation or international conventions deem it necessary.

ISSUED BY:
UNIVERSITY OF VENDA, RESEARCH ETHICS COMMITTEE
Date Considered: October 2021

Name of the HCTREC Chairperson of the Committee: Dr NS Mashau

Signature:

UNIVERSITY OF VENDA
OFFICE OF THE DIRECTOR
RESEARCH AND INNOVATION
2021 -11- 16
Private Bag X5050
Thohoyandou 0950

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