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ANALYSIS OF THE ADOPTION AND SUSTENANCE OF HEALTH AND NUTRITION BEHAVIOURS IN REDUCING UNDERNUTRITION OF CHILDREN UNDER THE AGE OF FIVE IN BUHERA DISTRICT, 2023

BY

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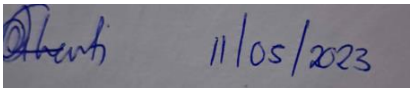
Abstract

Undernutrition is a major public health concern in low to middle income countries like Zimbabwe. This research examines the adoption and sustenance of health and nutrition behaviours aimed at mitigating childhood under-nutrition among children under the age of five in Buhera District, Zimbabwe. Childhood under-nutrition is a pressing global concern, and Buhera's unique socio-cultural, economic, and healthcare context presents distinct challenges and opportunities in addressing this issue. Donor agencies, like USAID, UN, WFP and etc, are coming in Zimbabwe channelling funds towards the reduction of undernutrition. The reduction of undernutrition cases is being implemented by different organisations and programs, such as Takunda Program, however, the cases of undernutrition still remain high due to the lack of adoption and sustenance of health and nutrition behaviours. The main aim of this research was to assess the adoption and sustenance of health and nutrition behaviours in reducing under nutrition in children under five years of age in Buhera district. The research also focused on elucidating the factors that influenced the adoption and perpetuation of health and nutrition behaviours within Buhera District. It emphasized the pivotal role of caregivers and their decision-making processes in shaping children's nutritional outcomes. Additionally, the study explored mechanisms sustaining these behaviours over time, seeking to identify strategies for fostering enduring change. A cross sectional study design was used and 285 participants were targeted to answer the questionnaire. Purposive sampling method was used. Focus group discussions and interviews were conducted in collecting data. From the research findings, the lack of adoption of health and nutrition behaviours were mostly affected by family or community pressures, economic, religion, social, cultural norms. Lack of education was a contributing factor to the adoption and sustenance of breastfeeding and commentary feeding practices. Caregivers' knowledge on complementary and breastfeeding practices was also another factor influencing the adoption of these nutrition interventions. The results showed that there was a weak negative correlation between the breastfeeding practices and the level of education, where, ($r=-0.196$, $n=48$, $p=0.181$). It was noted that there was a positive medium correlation for Exclusive Breastfeeding practices and the knowledge of the caregivers, ($r=0.498$, $n=48$. $p<0.001$). Family pressures had a major impact to the lack and sustenance of the complementary and breastfeeding practices. There was a negative relationship between caregivers' breastfeeding practices and pressures from the in-laws, husbands and the people around, ($r = -0.536$, $p<0.001$, $n=48$). On the Caregivers' knowledge on the initiation of complementary foods and caregiver's practice on the initiation of complementary foods, results have shown that there was a large positive correlation between the variable, ($r = 0.663$, $p=0.001$, $n=48$). There was a medium negative relationship between the dietary diversity practice and knowledge of dietary diversity of the caregivers, ($r=0.458$, $p=0.001$, $n=48$). In conclusion, program implementers should focus more on behaviour change so that these cultural norms and social beliefs towards health and nutrition could be positively changed.

Keywords: Adoption; Behaviours; Health; Nutrition; Sustenance; Undernutrition

Declaration Page

I declare that this project is my original work except where sources have been cited and acknowledged. The work has never been submitted, nor will it ever be submitted to another university for the award of a degree.

ANGELA LISA GHENTI 

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Dedication

I am dedicating this dissertation to my mother, Esnath Macheni, my husband, Tinashe Munyoro and my son Mikael Munyoro with the support they gave me through my academic time.

List of Acronyms and Abbreviations

CHW	Community Health Worker
CMAM	Community-based management of acute malnutrition
DHS	Demographic and Health Survey
EBF	Exclusive breastfeeding
FAO	Food and Agriculture Organization of the United Nations
FNS	Food and Nutrition Security
HNP	Health and nutrition program
IYCF	Infant and Young Child Feeding
MAM	Moderate Acute Malnutrition
MOHCC	Ministry of Health and Child Care
NCD	Non-communicable diseases
NGO	Non-Governmental Organization
SAM	Severe Acute Malnutrition
UN	United Nations
UNICEF	United Nations Children's Fund
USAID	United States Agency for International Development
WHO	World Health Organization
ZDHS	Zimbabwe Demographic and Health Survey
ZimVAC	Zimbabwe Vulnerable Assessment Committee
ZNNS	Zimbabwe National Nutrition Strategy

DEFINITIONS OF KEY TERMS

Complementary feeding: The introduction of solid or semi solid food to a child who is above six months and continued breastfeeding.

EBF: feeding a baby less than six months with breastmilk alone.

Malnutrition: A condition that is health related and is as a result of excessive or insufficient intake of nutrient.

Feeding practices: The way children are fed; this involves the way of breastfeeding and the introduction of solid and semi solid meals to an infant.

Nutrition status: This is the state or condition of someone's health.

Nutrition intervention: These are actions that are implemented in an area, country or region, and are nutrition related. These actions are implemented so as to reduce malnutrition cases in a specific or given area.

Stunting: A condition when a child have a low height or length for his or her age.

Under-weight: Having a weight that is below the expected for a certain age group.

Wasting: The depreciation of body fat and muscle tissue as a result of sickness or the

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CHAPTER 1 INTRODUCTION

1.1 Introduction

Undernutrition is a major public health condition caused by lack of enough food intake, not having enough of the right combination of food nutrients, or the body's failure to utilize the food eaten resulting in either, stunting, being underweight, or wasting (Maniragaba, Atuhaire & Rutayisire, 2023). According to the 2020 global statistics, about 149 million children under 5 years of age were estimated to be stunted and 45.4 million were estimated to be wasted. Undernutrition makes children much more vulnerable to diseases and even death (UNICEF, WHO & World Bank, 2020). Globally, close to 45.4 million of all deaths among under-fives are linked to undernutrition and many of the victims are in developing countries, where access to food and other essential resources may be limited (Govender, Rangiah, Kaswa & Nzaumvila, 2021).

Childhood under-nutrition remains a persistent global health challenge with profound implications for the well-being and future prospects of millions of children under the age of five (Maniragaba et al., 2023). In spite of the tremendous breakthroughs in healthcare and nutrition science, numerous children continue to experience undernutrition, which has a plethora of far-reaching consequences on their health (Bhutta, Das & Ruzvi, 2013). These effects encompass physical and cognitive stunting, weakened immune systems, and a heightened susceptibility to diseases, which ultimately diminishes a child's potential to thrive (UNICEF et al., 2020). Under-nutrition is also one of the largest barriers to sustainable increase in socioeconomic status and in poverty reduction (Frumence, Jin, Kasangala, Mang'enya, Bakar & Ochieng, 2023).

Stunting in a child is defined as too short for his or her age with a height-for-age Z-score less than 2 standard deviations from the median of the reference population. It is a sign of children's cumulative growth deficits and linear growth retardation as a result of chronic malnutrition (Dabar, Yadav, Goel, Mangal, Prasad & Singh, 2022). Stunting is typically linked to low socioeconomic position, poor maternal health and nutrition, incorrect feeding, and frequent early-life hospital admissions. Linear growth is a strong predictor of morbidity, mortality and learning capability during later life. Stunting is largely irreversible, especially the first 1000 days from conception have adverse effects in child's life. It has a significant impact on a child's physical and intellectual growth (Govender et al., 2021).

Wasting in a child is defined as low weight-for-height, where the weight-for-height Z-score is less than 2 standard deviations from the median of the reference population. Wasting demonstrates an acute undernutrition status that measures body mass with height and describes the current nutritional status of a child. It usually indicates recent and severe weight loss because of unavailability of enough food and infectious diseases, such as diarrhoea (Dabar et al., 2022). A young child with moderate-to-severely wasted episodes has an increased risk of death. The main underlying causes of wasting include poor access to appropriate healthcare, lack of food security, inappropriate feeding practices, a monotonous diet with low nutrient density, and lack of water, sanitation and hygiene services. Severe wasting episodes weaken a child's immunity, thereby making him or her susceptible to long-term developmental delays with an increased risk of death (Govender et al., 2021).

The medical, social, economic, and developmental effects of the global undernutrition burden are lasting and serious for individuals and their families, communities and

countries due to its complex and dynamic nature. The burden and developmental effects of undernutrition are not uniform world over though (Frumence et al., 2023). Countries with greater prevalence are faced with greater burden as well. For example, of the 144 million of the world's stunted under-five children, about 94% are within Asia and Africa alone while only about 6% are distributed within the rest of the regions of the globe. Asia alone accounts for about 54% while African accounts for about 40% of the worlds' stunted under five children (UNICEF et al., 2020).

1.2 Background to the Study

The Zimbabwe National Child Strategy (2015), reported that 25% of all under-fives deaths in Zimbabwe are linked to nutritional deficiencies. They postulated that for every three children under the age of five, one of them is chronically malnourished. This consequently has led to the implementation of various nutrition interventions in Zimbabwe. Nutrition intervention refers to the improvement of the specific nutrition problems in an area or country through education, advice and the provision of food components or supplementary foods (Scott, Delpor, Hainsworth, Pearson, Morgan, Huang, Akuoku, Ellen, Shekar, Levin, Toole & Homer, 2020).

Nutrition interventions can also be defined as the programmes and activities that are specifically targeted at behaviour change, either of beneficiaries of the program or the actors in the delivery system or both. This may include related interventions such as supplements or improved access to health care (UNICEF, 2023a). Nutrition interventions have a component of nutrition education that encompasses all its activities (Scott et al., 2020)**.** These activities are pursuant to Sustainable Development Goal 2.2, which calls for an end to all forms of malnutrition, with 2025 targets of a

40% reduction in stunting (relative to 2012), for wasting to occur in less than 5% of children (UNICEF, 2019).

Nutrition education aims to change nutritional intake, personal habits and practices, nutrition related issues as well as access to proper health care and services. Nutrition education helps the people to make good choices on food through empowering them (FAO, UNICEF & Washington State University, 2022). In Zimbabwe, nutrition interventions are under way in the Manicaland Province covering areas like Buhera, Chipinge and Chimanimani; and in Masvingo Province covering areas like Bikita, Chivi and Zaka. Efforts to achieve nation-wide intervention coverage are in progress, however the progression is slow (Baseline Study, 2015).

The Zimbabwe Demographic Health Survey (2015), states that under-fives undernutrition remains a significant problem in the country. The survey found that 27% of children under five years of age are stunted, 4% are wasted and 11% are underweight. 34% of children under six months of age were exclusively breastfed, and only 63% of children aged 6-23 months received a minimum acceptable diet, which includes a variety of nutrient-rich foods. Zimbabwe has succeeded in reducing both underweight and wasting for the children under the age of five for the past 30 years (Zimbabwe National Nutrition Strategy, 2018).

In spite of the prevailing nutrition intervention programs for the under five children in Zimbabwe, stunting still stands at 32% and for Buhera it stands at 30% (Zimbabwe Vulnerable Assessment Committee, 2016). The prevalence of undernourished children who are between 6 months to 5 years was found to be at 9.9% for Zimbabwe and 9.5% for Buhera (Zimbabwe National Nutrition Survey, 2016). This was alarming, hence the interest from donor agencies like USAID, UN, and UNICEF for more nutrition

interventions in Zimbabwe that focused on the 1000 days window of opportunity period from pregnancy to 2 years of age. These interventions have and are still having a considerable impact on the eradication of under-fives malnutrition morbidity and mortality (UNICEF, 2019).

While agricultural interventions have the potential to improve nutrition outcomes in Africa, adoption and sustenance of the recommended behaviours is often limited due to a plethora of reasons (FAO et al., 2022). A study by Scott et al., (2020) on the effectiveness of agricultural interventions in improving under-fives nutrition also reviewed that several other factors affected the adoption and sustenance of breastfeeding and complementary feeding practices. These factors include lack of access to resources and inputs, limited knowledge and skills, and cultural and social factors. There is need to learn from other closely related areas and contextualize with respective areas, hence the reason for this research is to assess the adoption and sustenance of nutrition intervention activities Buhera District.

1.3 Statement of the Problem

Malnutrition is higher in rural areas than in urban areas, with stunting being at 26.5% and 22.7% respectively. In Zimbabwe, stunting is highest in Manicaland province and is correlated to maternal education and wealth quintiles (ZNNS, 2018). Mothers with formal education have a 45% chance of having a stunted baby and mother with more than secondary education have a 9% chance of having a stunted baby. The lowest and highest wealth quintiles constitute 33% and 16.6% of stunted babies respectively (ZDHS, 2015). Failure to adopt nutrition interventions by mothers in Buhera District remains a barrier to the effectiveness of implemented nutrition interventions resulting to undernutrition. This coupled with an array of other challenges such as chronic food

shortages, lack of access to adequate healthcare services, poor water supply and sanitation facilities has contributed to the high rates of undernutrition.

The prevalence of stunting among under-fives in Buhera district is 31.4%, while wasting and underweight are at 4.4% and 7.2%, respectively. Furthermore, 28% of women of reproductive age are underweight and 11.6% are chronically wasted (ZNNS, 2018). In attempts to curb these challenges, donor agencies have been channelling aid for nutrition interventions into affected and vulnerable communities in Zimbabwe for the past 15 years; and Buhera district was no exception. Unfortunately, the expected impacts of these nutrition interventions are yet to be fully realised. This could be as a result of lack of adoption of the promoted health and nutrition behaviours. Factors influencing lack of adoption and sustenance of the promoted nutrition intervention activities are best known by the beneficiaries, thus the need to be explored.

1.4 Research objectives

The purpose of this study is to assess the adoption and sustenance of health and nutrition behaviours in reducing undernutrition in Buhera district, from 2018 up to date.

1.4.1 Specific Objectives

Specific objectives are:

i. To identify the key knowledge, attitudes, and practices on health and nutrition behaviours by caregivers of children under the age of five, from the year 2018 to 2023.
ii. To identify the key knowledge, attitudes, and practices on health and nutrition behaviours by program implementers of Takunda project from 2018 up to 2023.

iii. Determine the factors contributing to the lack of adoption and sustenance of health and nutrition behaviours by caregivers of children under the age of five.

iv. To determine challenges being faced by program implementers in implementing health and nutrition behaviours.

1.5 Research Questions

i. What are the knowledge, attitudes, and practices related to health and nutrition behaviors among caregivers of children under the age of five in Buhera district?

ii. What are the knowledge, attitudes, and practices related to health and nutrition behaviors among program implementers of the Takunda project in Buhera district?

iii. What are the factors that contribute to the lack of adoption and sustenance of health and nutrition behaviors by caregivers of children under the age of five in Buhera district?

iv. What are the challenges faced by program implementers in implementing health and nutrition behaviors in Buhera district through the Takunda project?

1.6 Justification

While there is a growing body of research on health and nutrition behaviour interventions to reduce undernutrition, there is very little research on the adoption and factors affecting interventions to reduce undernutrition, in the context of Buhera district. Understanding the factors that facilitate or hinder the adoption and sustainability of health and nutrition behaviours in Buhera district is critical for the development of effective and contextually relevant interventions. Furthermore, it was essential to investigate on the sociocultural and economic factors that influence health

and nutrition behaviours in this specific context. A better understanding of the local context and cultural practices will facilitate the design and implementation of effective interventions that are tailored to the needs and contexts of the Buhera district population.

The research explored the factors that influence the uptake and sustainability of health and nutrition behaviours in this specific context. Additionally, the findings of this research could inform policy and practice by providing insights into how to design and implement successful health and nutrition behaviour interventions that are contextually relevant and sustainable in Buhera district. Ultimately, this research has the potential to contribute to the reduction of undernutrition in Buhera district and improve the health outcomes of the population.

1.7 Delimitations

The study was limited to Buhera District in Zimbabwe where the Takunda Project is being implemented by CARE International. The target population for this study were caregivers of children under five years of age who are beneficiaries of the Takunda Project. The study focused on the period from the inception of the Takunda Project up until the time of data collection. The study focused on specific health and nutrition behaviours promoted by the Takunda Project, such as breastfeeding and complementary feeding. The study mainly focused on stunting and wasting when it was going in-depth on malnutrition.

CHAPTER 2 REVIEW OF RELATED LITERATURE

2.1 Introduction

This chapter will review the current research on the adoption and sustenance health and nutrition behaviours in reducing undernutrition. This chapter will explore the knowledge, attitudes, and practices on health and nutrition behaviours by caregivers and program implementers. Factors contributing to the lack of adoption and sustenance of health and nutrition behaviours by caregivers as well as discussing challenges being faced by program implementers in implementing health and nutrition behaviours will be explored in this chapter.

2.2 Stunting and wasting rates

According to UNICEF, WHO and World Bank Group (2020), stunting rates are decreasing in all regions worldwide, except for the African region. The number of stunted children under the age of 5 years in Africa has risen from 49.7 to 57.5 million between 2000 and 2019. During the same period, Southern Africa alone had reported the rise of 100 000 stunted under 5 years children. On the other hand, of the 47.0 million children under the age of 5 years who were wasted, 14.3 million were severely wasted, with over a one-third of them living in Africa (UNICEF et al., 2020). Figure 1.1 shows global trends on under-fives stunting and wasting from the year 2000 to 2022.

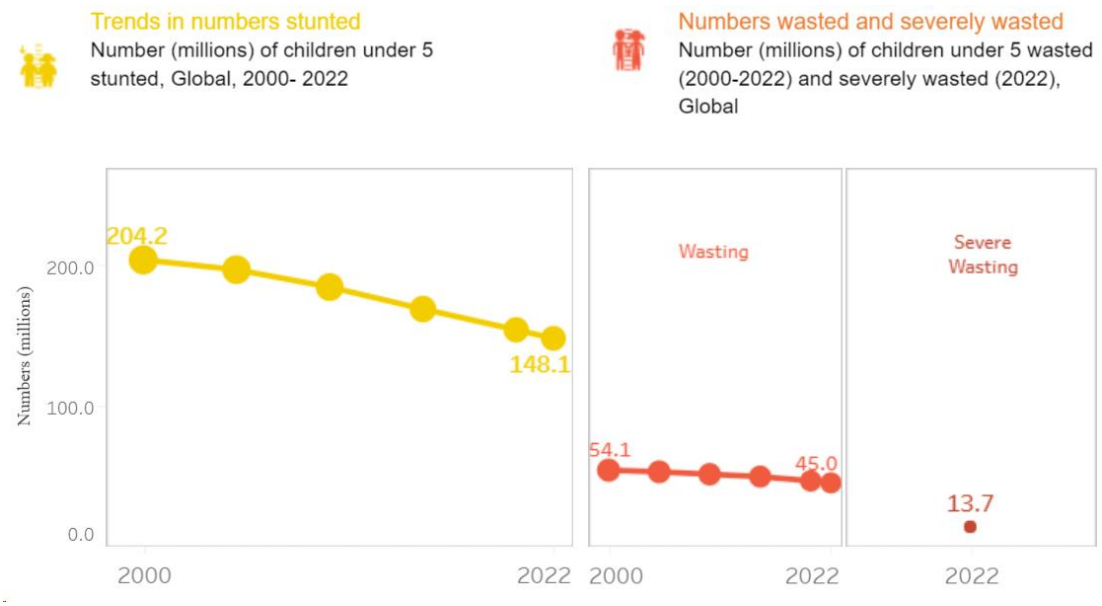

Figure 2.1: Global trends on under-fives stunting and wasting from the year 2000 to 2022. Adopted from "Level and trends in child malnutrition" by UNICEF et al., (2023)

2.3 Theoretical Framework

The Malnutrition Conceptual Framework., illustrates that there is a vicious cycle and a direct relationship between dietary Intake that is inadequate and the presence of disease. Disease such as diarrhoea results in poor absorption of nutrients since the food does not have sufficient time for adequate absorption to take place. The disease however requires an increased demand for nutrients so that the body recovers, also causes a reduced nutrient utilization, this in-turn causes other diseases and further deterioration (UNICEF, 2021).

A dietary intake that is inadequate alone may lead to an immunity that is poor hence the body becomes susceptible to infectious diseases. Inadequate dietary intake and diseases are immediate causes of malnutrition, hence posing a negative impact that is heavier especially to children under the age of five (Scott et al., 2020). Malnutrition is not as a result of shortages of food alone, but is also as a result of other issues linking

caring practices, health, education, sanitation and hygiene, women's empowerment (Frumence et al., 2023).

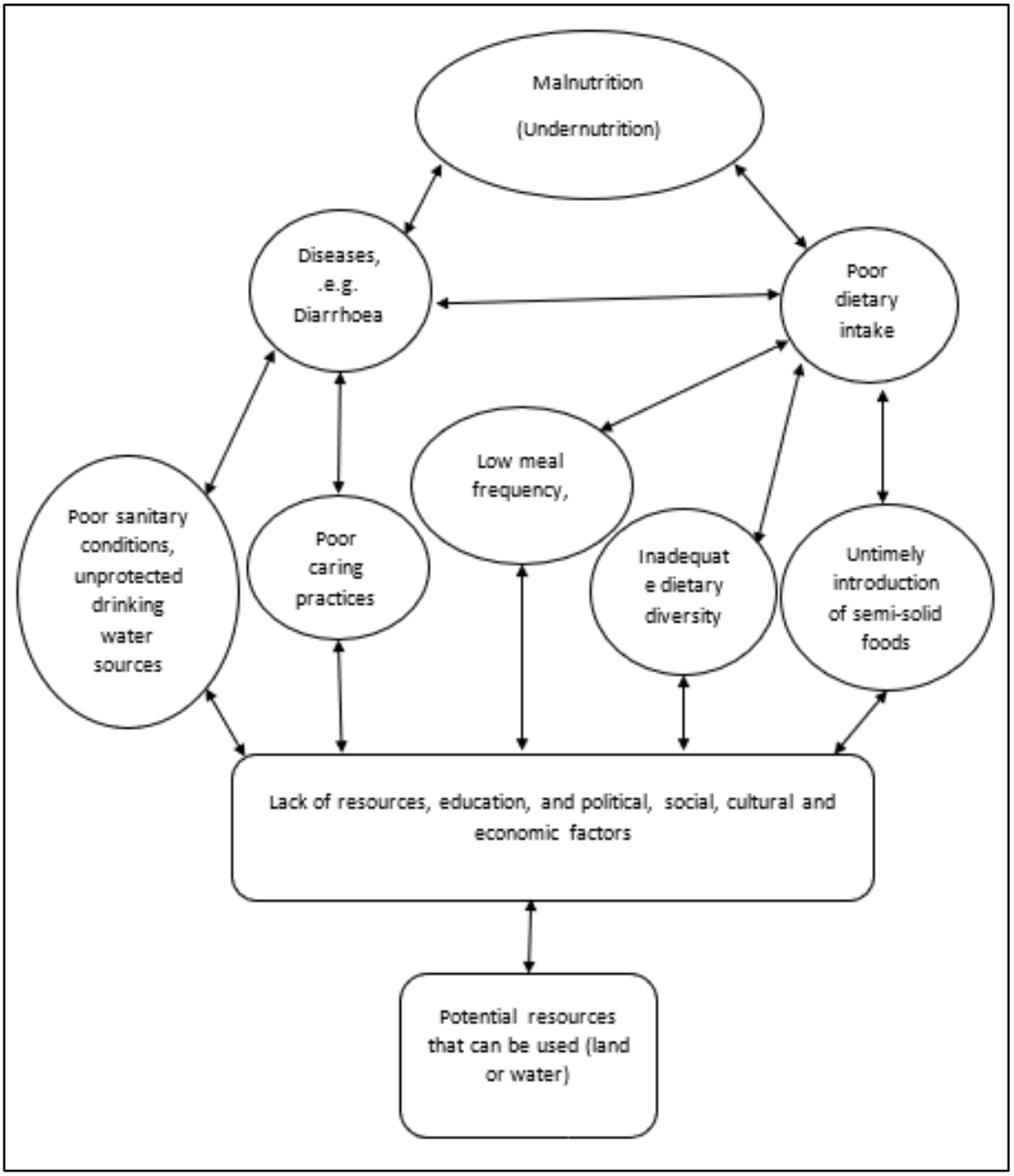

Figure 2.2: A conceptual framework: Adapted from the journal article titled "Malnutrition in children under the age of 5 years in a primary health care setting" (Govender et al., 2021).

2.4 Relevance of the theoretical framework to the study

Malnutrition conceptual framework provide a structured approach to understanding the complex factors contributing to malnutrition, which is a critical issue among children under the age of two. By applying insights from malnutrition framework, caregivers and health practitioners can better address the challenges and barriers to adopting and sustaining positive health and nutrition behaviors. Malnutrition framework often highlight various determinants of malnutrition, including socioeconomic factors, food security, healthcare access, and cultural practices. Understanding these underlying causes can help caregivers and health professionals identify the specific challenges that caregivers face in providing adequate nutrition for their children. For example, economic constraints may limit access to nutritious foods, while cultural beliefs may influence feeding practices.

The lack of adoption and sustenance of infant and young child feeding practices is the major cause of malnutrition (UNICEF, 2023b). Factors influencing undernutrition are as a result of the choices that are made by individuals regarding foods to produce, the diets that their families consume and the nurturing of the nutritionally vulnerable people (FAO et al., 2022). Earnings that are high and a good mentality are as a result of good nutrition, hence this enhances the growth of the society and the macroeconomic. Without appropriate interventions, malnutrition persists, leading to impaired quality of life and global burden of disease. These interventions make up the Infant and Young Child Feeding practices which are also associated with the problem of poor maternal and child care practices (UNICEF, 2021).

2.5 Types of Nutrition

Undernutrition is a condition in which an individual does not receive adequate nutrients, including protein, vitamins, and minerals, due to insufficient intake or

absorption (WHO, 2021). Undernutrition can lead to various health issues, including stunted growth, weakened immune system, and cognitive impairments. It is a widespread problem in developing countries, but it can also affect individuals in developed countries who have limited access to nutritious food. Undernutrition is also described as a complex metabolic disorder that results from a lack of sufficient nutrient intake or utilization by the body (UNICEF, 2021). According to (WHO, 2021), undernutrition can be classified into different types based on the severity and underlying causes. The following are the major types of undernutrition:

- **Acute malnutrition**: It is characterized by a sudden and severe loss of weight due to inadequate nutrient intake. Acute malnutrition can result from a variety of causes, including famine, war, and natural disasters.
- **Chronic malnutrition**: It is characterized by long-term undernutrition and is usually the result of a lack of access to food or a poor diet. Chronic malnutrition can lead to stunting, wasting, and impaired cognitive development.
- **Hidden hunger**: It occurs when the body lacks essential vitamins and minerals, despite having enough energy and protein intake. Hidden hunger can lead to a range of health problems, including anaemia and impaired immune function.
- **Starvation**: It is the most severe form of undernutrition and occurs when the body does not receive enough energy or nutrients to maintain life. Starvation can lead to organ failure, coma, and death.

2.6 Global under-fives malnutrition

Out of the total world's undernourished children, 80% lives in 20 countries (Murarkar, Gothankar, Doke, Pore & Lalwani, 2020). UNICEF (2019), reported the causes of childhood malnutrition as insufficient diet, frequent infections, poor breastfeeding

practices, delayed introduction of complementary foods and inadequate protein in the diet. Growth, food taboos, health state, and dietary preferences are additional factors that affect food intake. Malnutrition can also result from abandonment, irregular meal schedules, a lack of food, and inadequate parental education (Jubayer, Islam & Naan, 2022).

In May 2012, the decision making body of the World Health Organization, agreed on a new target: “Reducing the number of stunted children under the age of 5 by 40 percent by 2025.” The United Nations Secretary-General has included elimination of stunting as a goal in his Zero Hunger Challenge, launched in June 2012. A review of national programs and strategies to put more of an emphasis on preventative and integrated programs has resulted from the attention on malnutrition in children under five (UNICEF, 2012). The SUN movement seeks to build national commitment to accelerate progress to reduce stunting and other forms of undernutrition, as well as overweight. Through SUN, countries are working to increase access to affordable and nutritious food, as well as demand for it (UNICEF, 2023).

Other elements that affect nutritional status are also being addressed, including better feeding and caring techniques, clean water, sanitation, health care, social protection, and programs to support women. The Joint Malnutrition Estimates released in 2023 reveal insufficient progress to reach the 2025 World Health Assembly global (UNICEF, 2023a). Along with the focus shifting to lessen stunting, there has been a significant change in the state of global nutrition, which has generated never-before-seen action. A few years ago, the nutrition community was dispersed and lacked a clear voice, making nutrition a neglected area of development (UNICEF, WHO & World Bank, 2023).

The initiation of the SUN movement in 2010 brought about the much-needed change. Only about one third of all countries are ‘on track’ to halve the number of children affected by stunting by 2030. An assessment of progress to date, indicates it not being possible for about one quarter of countries (UNICEF, 2023). An assessment of progress towards the wasting target is not possible for nearly half of countries. More intensive efforts are required if the world is to achieve the global target of reducing the number of children with stunting to 89 million by 2030 (UNICEF, 2023a). With current progress, the 2030 target will be missed by 39.6 million children, with more than 80 per cent of these ‘missed’ children living in Africa (UNICEF et al., 2023).

All forms of malnutrition are preventable (UNICEF, 2023). To stop malnutrition before it starts, children and their families need access to nutritious diets, essential services and positive practices to set them on the path to survive and thrive (Gebre, Reddy, Mulugeta, Sedik & Kahssay, 2019). But today, these vital pathways to good nutrition are under growing threat, as many countries plunge deep into a global food and nutrition crisis fuelled by poverty, conflict, climate change and the enduring secondary effects of the COVID-19 pandemic. As the world responds to the crisis, urgent action is critical to protect maternal and child nutrition especially in the most affected regions and secure a future where the right to nutrition is a reality for every child (UNICEF et al., 2023).

2.7 Undernutrition in Africa

Undernutrition is a major public health problem in Africa, affecting millions of people across the continent. In Sub-Saharan Africa, about one in every four individuals is undernourished, leading to stunted growth, weakened immune systems, and poor cognitive development (FAO, 2019). Factors such as poverty, climate change, and

conflict contribute to the high levels of undernutrition in Africa (UNICEF, 2019). Several initiatives have been implemented to address undernutrition in Africa, including the Scaling-Up Nutrition movement, which aims to improve nutrition outcomes through collective action and partnerships (SUN, 2021).

2.8 Undernutrition in Zimbabwe

Undernutrition is a significant public health issue in Zimbabwe with about a third of children under the age of five being stunted (UNICEF, 2021). The high prevalence of undernutrition is due to factors such as poverty, limited access to nutritious food, and poor sanitation and hygiene practices (FAO, 2019). Zimbabwe has implemented several initiatives to address undernutrition, including the National Nutrition Strategy, which aims to improve nutrition outcomes through multi-sectoral interventions (ZNNS, 2018). In addition, partnerships with international organizations such as UNICEF and the World Food Programme have helped to provide food assistance and support for nutrition programs in the country (WFP, 2021). Despite these efforts, progress has been slow, and undernutrition remains a significant challenge for many countries in Africa (UNICEF, 2021).

2.9 Adopting good health and nutrition behaviours

Several behaviours change interventions have been implemented to promote good health and nutrition behaviours and reduce undernutrition in children under the age of two. These interventions have included education on maternal and child nutrition, feeding support, community mobilization, and the provision of food supplements (UNICEF, 2019). A study by Scott et al., (2020) assessed the impact of an integrated community-based intervention on child nutrition and mortality in rural India. The

intervention included behaviour change communication, community mobilization, and provision of food supplements. The study found that the intervention led to significant improvements in child nutrition, with a reduction in the prevalence of underweight children by 31%.

Na et al., (2018) evaluated the effectiveness of a community-based nutrition education program on child nutrition in Myanmar. The program aimed to promote the adoption of healthy dietary behaviours and improve knowledge on child nutrition. The study found that the program led to significant improvements in child nutrition, with a reduction in the prevalence of stunting by 14%. Mangizvo et al., (2019) also conducted a systematic review on the effectiveness of behaviour change interventions on child nutrition. The review found that behaviour change interventions, including dietary counselling, feeding support, and education, were effective in improving child nutrition outcomes, with a reduction in the prevalence of stunting by 11%.

Another study by Ruel et al., (2013) assessed the effectiveness of maternal and child health and nutrition interventions on child nutrition in low-income and middle-income countries. The interventions included education on maternal and child nutrition, micronutrient supplementation, and breastfeeding promotion. The study found that the interventions led to significant improvements in child nutrition, with a reduction in the prevalence of stunting by 15%. Uchechukwu et al., (2021) evaluated the effectiveness of a community-based nutrition education program on maternal and child nutrition in Ethiopia. The program included education on maternal and child nutrition, food preparation, and hygiene practices. The study found that the program led to significant improvements in child nutrition, with a reduction in the prevalence of stunting by 9%.

2.10 Lack of adoption of health and nutrition behaviours

According to Mangizvo et al., (2019), the adoption of these behaviours is often limited by various factors that include:

- **Low Awareness and Knowledge**: Many caregivers lack knowledge on appropriate feeding practices and the importance of good nutrition in child development.
- **Inadequate Resources**: Limited resources, including finances and access to food and healthcare, can hinder the adoption of good health and nutrition behaviours.
- **Cultural Beliefs and Practices**: Cultural beliefs and practices can influence feeding practices, leading to the adoption of unhealthy behaviours.
- **Limited Access to Healthcare and Nutrition Services**: Limited access to healthcare and nutrition services can limit the adoption of good health and nutrition behaviours, particularly in rural areas.

2.11 Sustaining good health and nutrition behaviours

Sustaining good health and nutrition behaviours is essential in reducing undernutrition in children under the age of 2. The following strategies have been identified as effective in sustaining good health and nutrition behaviours:

- **Community Mobilization**: Community mobilization is essential in sustaining good health and nutrition behaviours. The involvement of community members in designing and implementing health and nutrition programs increases the sense of ownership and improves the sustainability of the interventions (Black, Victoria & Walker, 2013).

- **Behaviour Change Communication**: Behaviour change communication is an essential strategy for sustaining good health and nutrition behaviours. Behaviour change communication aims to increase knowledge, create awareness, and promote the adoption of healthy behaviours (Govender et al., 2021).
- **Monitoring and Evaluation**: Monitoring and evaluation are critical in sustaining good health and nutrition behaviours. Monitoring and evaluation help to identify challenges and make necessary adjustments to the interventions (UNICEF, 2019).
- **Policy and Program Support**: Policy and program support are essential in sustaining good health and nutrition behaviours. Governments and non-governmental organizations can provide policy and program support to promote good health and nutrition behaviours (UNICEF, 2019).

2.12 Lack of sustenance of good health and nutrition behaviours

Sustaining good health and nutrition behaviours is crucial in reducing undernutrition in children under the age of two. However, the following factors often hinder the sustenance of good health and nutrition behaviours:

- **Lack of Community Involvement**: The involvement of the community is crucial in sustaining good health and nutrition behaviours. However, the lack of community involvement in designing and implementing health and nutrition programs can limit the sustainability of the interventions (Jubayer et al., 2022).
- **Inadequate Policy and Program Support**: Governments and non-governmental organizations play a critical role in promoting good health and nutrition behaviours. However, inadequate policy and program support can

limit the sustainability of interventions aimed at reducing undernutrition (Moyo et al., 2018).

- **Limited Access to Healthcare and Nutrition Services**: Limited access to healthcare and nutrition services can limit the sustenance of good health and nutrition behaviour (Jubayer et al., 2022).
- **Insufficient Monitoring and Evaluation**: Monitoring and evaluation are critical in identifying challenges and making necessary adjustments to interventions. However, the lack of monitoring and evaluation can limit the sustainability of health and nutrition interventions (Moyo et al., 2018).

2.13 Key knowledge, attitudes, and practices on health and nutrition behaviours by caregivers of children under the age of two

According to the WHO (2019), a caregiver of a child under two years of age is defined as "an individual who is responsible for the well-being and care of the child, and can be a parent, grandparent, or other family member, as well as a professional caregiver". The duties of a caregiver of children under two years of age include providing adequate nutrition, hygiene, and health care, as well as promoting social and emotional development (UNICEF, 2018). Caregivers' knowledge, attitude, and practices on health and nutrition are crucial in ensuring the growth and development of children, especially those under two years of age (UNICEF, 2023b).

The first two years of life are a critical period for children's growth and development, and proper nutrition is essential during this period. Caregivers, who can be parents, grandparents, or other family members, as well as professional caregivers, play a significant role in ensuring that children receive adequate nutrition (WHO, 2018). Caregivers' knowledge of appropriate feeding practices, such as exclusive

breastfeeding for the first six months of life, and the introduction of complementary foods, can significantly impact a child's growth and development (UNICEF, 2023b).

Caregivers who have a good understanding of proper feeding practices have healthier children who grow and develop better than those with inadequate knowledge (WHO, 2018). Caregivers who are aware of the signs of malnutrition or illness can also ensure that children receive timely medical care. Caregivers' attitudes towards nutrition can also impact children's health (Gebre et al., 2019). Positive attitudes towards the importance of good nutrition, as well as a willingness to seek advice and guidance, when necessary, can lead to better feeding practices and healthier children. Negative attitudes, on the other hand, may lead to inappropriate feeding practices, which can negatively impact children's growth and development (Murarkar, Gothankar, Doke, Pore, Lalwani, Dhumale, Quraishi & Malshe, 2020).

Caregivers' practices regarding health and nutrition, such as food preparation, storage, and hygiene, can also impact children's health. Adequate knowledge of proper food handling and storage practices, as well as good hygiene practices, can reduce the risk of infection and illness (UNICEF et al., 2023). Research has shown that caregivers' knowledge on health and nutrition is crucial for the overall health and well-being of children (Morgado et al., 2020). According to a study conducted in Zimbabwe, "caregivers' knowledge, attitude, and practices on health and nutrition are crucial for ensuring the well-being of children" (Matsungo, Kamazizwa, Mavhudzi, Makota, Kamunda, Matsinde, Chagwena, Mukudoka & Chopera, 2023). A study was conducted in South Delhi revealed that caregivers' knowledge, attitude, and practices on health and nutrition play a significant role in the growth and development of children under two years of age (Dabar, Yadav, Goel, Mangal, Prasad, & Singn, 2022).

A study that was also conducted to identify the key knowledge, attitudes, and practices on health and nutrition behaviours by caregivers of children under the age of two. The study found that caregivers' knowledge of key health and nutrition practices was generally low, but their attitudes and practices were positively associated with better child health outcomes (Smith et al., 2019). Specifically, caregivers who had a positive attitude toward exclusive breastfeeding, appropriate complementary feeding, and improved sanitation practices were more likely to adopt these behaviours, which in turn improved their child's health status (Murarkar et al., 2020).

Caregivers' knowledge, attitude, and practices on health and nutrition are crucial for the overall health and well-being of children, especially those under two years of age. Interventions aimed at improving caregivers' knowledge, attitudes, and practices towards nutrition and health can positively impact children's growth and development, ultimately leading to healthier and happier children (UNICEF, 2023b).

2.14 Key knowledge, attitudes, and practices on health and nutrition behaviours by program implementers

Key knowledge, attitudes, and practices of program implementers play a crucial role in promoting good health and nutrition behaviours among communities. Program implementers play a vital role in implementing and delivering health and nutrition programs (UNICEF, 2018). Key knowledge, attitudes, and practices on health and nutrition behaviours that program implementers should possess include the following:

Knowledge of health and nutrition: Program implementers should have knowledge of basic health and nutrition principles, including information on the nutrient needs of

different age groups, the importance of adequate nutrition during pregnancy and infancy, and common nutrition-related health problems (Scott et al., 2020).

Understanding of cultural practices: Program implementers should understand the cultural practices of the communities they work with. This includes knowledge of traditional foods and food practices, as well as cultural beliefs about health and nutrition (Murarkar et al., 2020).

Communication skills: Effective communication skills are critical for program implementers. They need to be able to communicate complex health and nutrition concepts in a way that is easily understandable to community members (Jubayer et al., 2022).

Attitude towards community participation: Program implementers should have a positive attitude towards community participation. They should be willing to work with community members to identify health and nutrition problems and develop solutions that are appropriate for the community's needs (Scott et al., 2020).

Skills in program planning and implementation: Program implementers should have skills in program planning and implementation, including the ability to develop a program logic model, design and implement interventions, and monitor and evaluate program outcomes (Murarkar et al., 2020).

Understanding of behaviour change: Program implementers should have an understanding of behaviour change theory and techniques. This includes knowledge of how to identify the determinants of behaviour, how to design interventions that target those determinants, and how to monitor and evaluate the effectiveness of interventions (Jubayer et al., 2022).

Pelto et al., (2017) states that program implementers need to have a comprehensive understanding of the socio-economic and cultural factors that influence food consumption and dietary practices in a given population. This knowledge will help them develop and implement effective nutrition interventions that are tailored to the specific needs of the community. In addition to knowledge, program implementers need to have positive attitudes towards promoting healthy eating habits and a balanced diet (Scott et al., 2020).

According to a study by Frumence et al., (2023) program implementers need to believe in the effectiveness of their interventions and have a strong commitment to improving the health and nutrition status of the community they serve. This positive attitude will enable them to effectively communicate the importance of healthy eating habits and encourage individuals to adopt healthier lifestyles. Program implementers need to demonstrate good practices in their own eating habits and lifestyle choices to serve as role models for the community (UNICEF et al., 2023). Program implementers should practice what they preach by following a balanced diet and engaging in regular physical activity. This will not only improve their own health and wellbeing but also inspire individuals in the community to adopt healthier lifestyle choices (Koyratty, Mbuya, Jones, Schuster, Kordas, Li, Tavengwa, Majo & Smoth, 2022).

Program implementers play a critical role in implementing and delivering health and nutrition programs. Possessing key knowledge, attitudes, and practices on health and nutrition behaviours is essential to ensure that program interventions are effective and sustainable (UNICEF, 2023b). By possessing the right knowledge and skills, program implementers can work with communities to address health and nutrition problems, ultimately leading to improved health outcomes for communities. The knowledge,

attitudes, and practices of program implementers are critical in promoting health and nutrition behaviours among communities (Maniragaba et al., 2023).

Effective nutrition interventions require program implementers to have a comprehensive understanding of the socio-economic and cultural factors that influence food consumption and dietary practices in a given population (Frumence et al., 2023). Additionally, program implementers need to have positive attitudes towards promoting healthy eating habits and demonstrate good practices in their own lifestyle choices (FAO et al., 2022).

2.15 Challenges faced by the caregivers in adopting good health and nutrition behaviours

Caregivers of children under the age of two play a critical role in establishing healthy habits and ensuring optimal health outcomes for their children (Murarkar et al., 2020). However, adopting good health and nutrition behaviours can be challenging for these caregivers, especially in low-resource settings where access to information and resources is limited (Scott et al., 2020). One of the significant challenges that caregivers face is a lack of knowledge about proper infant and young child feeding practices (Murarkar et al., 2020).

Scott et al., (2020) states that caregivers may not be aware of the importance of exclusive breastfeeding for the first six months of life or may introduce complementary foods too early or too late, which can affect the child's health and growth outcomes. Moreover, caregivers may not know how to prepare nutritious and safe food for their children or may not have access to a variety of healthy food options, which can lead to inadequate nutrition and malnourishment (FAO et al., 2022).

Another challenge that caregivers face is the lack of access to health services and support systems (Gallegos et al., 2017). Caregivers in low-resource settings may have limited access to health facilities, making it difficult to seek medical advice or receive support from healthcare professionals. In addition, social support from family and community members may be limited, leaving caregivers to navigate child-rearing and health decisions alone (Frumence et al., 2023)

Caregivers also face challenges in managing their children's health during illness and may not be aware of the appropriate health-seeking behaviours, leading to delays in seeking medical attention or inappropriate use of home remedies (Thorne-Lyman et al., 2017). Moreover, children's illnesses can cause a loss of appetite, making it challenging to ensure that they receive adequate nutrition (Gallegos et al., 2017). According to Thorne-Lyman et al., (2017) caregivers may also face emotional and psychological stress, which can affect their ability to provide appropriate care and nutrition for their children. Stressors such as poverty, social isolation, and domestic violence can affect the caregiver's emotional well-being, leading to neglect or inconsistent caregiving practices (Frumence et al., 2023).

Furthermore, caregivers of children under the age of two face numerous challenges in adopting good health and nutrition behaviours. Addressing these challenges requires interventions that provide education and support to caregivers and ensure that healthy food options are available and accessible. Addressing the emotional and psychological needs of caregivers is also crucial in promoting good health behaviours (Scott et al., 2020).

2.16 Challenges being faced by program implementers in implementing health and nutrition behaviours

Good health and nutrition behaviours are essential for ensuring optimal physical and mental wellbeing. However, implementing such behaviours can be challenging for program implementers due to various factors (Govender et al., 2021). One major challenge faced by program implementers is the lack of resources, including financial and human resources, to effectively carry out health and nutrition programs. Limited funding and inadequate staffing can hinder the implementation of effective health and nutrition interventions, resulting in a lack of follow-up and sustained behaviour change (Scott et al., 2020).

Another challenge is the difficulty of changing in-grained behaviours and habits, which can be resistant to change even with the most well-intentioned interventions (Kalu & Etim, 2018). For instance, encouraging individuals to adopt healthy eating habits and exercise regularly requires significant effort, as these behaviours often compete with pre-existing habits and preferences. In addition, sociocultural and environmental factors can also pose challenges to the implementation of good health and nutrition behaviours (FAO et al., 2022). These factors can include lack of access to healthy food options, limited availability of safe places to exercise, and cultural norms that may not support healthy behaviours (Frumence et al., 2023).

To overcome these challenges, program implementers can utilize a variety of strategies, such as engaging communities in the design and implementation of programs, leveraging technology to increase access to health information and resources, and partnering with local organizations to address systemic barriers to healthy behaviour adoption (Dabar et al., 2022). Overall, implementing good health and nutrition behaviours requires a multifaceted approach that addresses various

challenges and leverages community support and resources to ensure sustainable behaviour change (UNICEF et al., 2020).

2.17 Major health and nutrition interventions

The most interventions that are being implemented by program implementers include feeding practices which include, breastfeeding and complimentary feeding.

2.17.1 Feeding practices

The nutritional status of children is determined by the Infant and Young Child Feeding Practices which determines also the health and development of a child throughout his or her lifetime. According to Kalu & Etim (2018) infant feeding practices influence the health of the mother and the child. The feeding practices are crucial and significant to the development of every child's potential in life. According to Maniragaba et al., (2023) the major determinant of child malnutrition is due to lack of knowledge of appropriate foods and feeding practices by mothers or caregivers of under two children.

The time period between birth and 24 months of age is the crucial window period to promote health, growth and development through optimum feeding practices. (Black et al., 2008). According to UNICEF, (2019) complementary feeding practices and suboptimal breastfeeding practices contribute to one third of malnutrition. Breastfeeding and complementary feeding practices that are suboptimal are responsible for under nutrition in infants. Infant and young child feeding practices that are optimal prevents 19% deaths of children under five years of age, (UNICEF et al., 2020).

The poor feeding practices results from insufficient nutritional imbalance and contributes to diarrhoea are the major causes of death and sickness in children. The link between malnutrition and child feeding practices have been recognized recently (Frumence et al., 2023). UNICEF and WHO have presented the indicators 0-24 month's children in the indicators for assessing the IYCF feeding practices. The feeding practices included are EBF, early breastfeeding initiation, introduction of solid and semi solid meals to children who are being breastfed, feeding the child during diarrhoea (UNICEF, 2023a).

Maternal education is a factor to consider. Maternal education is positively linked to infant feeding practices (Ruel, 2013). Caregivers receiving maternal education have high chances of understanding the infant and young child feeding practices and adopting them. This is however comparable to uneducated caregivers.

2.17.2 Breastfeeding

Breastfeeding is regarded as the major aspect of child's survival and good nutritional status. Breastfeeding provides a good start for the life of a child and also is an advantage as it benefits maternal health, provides protection against non-communicable diseases (UNICEF, 2023b). According to Mphasha, Makwela, Muleka, Maanaso & Phoku, (2023) optimal breastfeeding is of greatest importance and saves over 800 000 children under the age of five years if properly practiced. Safari (2013) refers to breastfeeding as a primary and major determinant of child's nutritional status and its susceptibility to morbidity. However, breastfeeding practices are influenced by various factors which including beliefs, knowledge, norms, and previous experience of the mother (Kalu & Etim, 2018).

Within the first hour of childbirth, early initiation of breastmilk is recommended. This protects the baby from various infectious diseases, and this also reduces mortality rates of infants. Exclusive breastfeeding for the first six months of life is a recommended practice to mothers as it has benefits for both the mother and the infant (WHO, 2008). UNICEF (2012) reported that breastmilk provides energy needs for children, it provides children with half or more of child's energy needs between children who are six to twelve months, for children between twelve to twenty-four months, the energy needs asserts to a third. Breastmilk reduces mortality rates for malnourished children, and it is an important source of nutrients (Kalu & Etim, 2018).

The advantages of breastfeeding normally depend on breastfeeding initiation, breastfeeding duration, and the age at which the baby is complimentary fed. If the child is not breastfed within the first hour of birth, the child will not receive its first immunization (Frank et al., 2019). This is because breastmilk contains antibodies and development factors from the mother preventing the child from any infectious diseases and death (Sawadogo et al., 2011). Type 2 diabetes, acute ear infections, gastrointestinal, and respiratory infections can be as a result of not breastfeeding the child. Optimal breastfeeding enhances and promotes optimal growth and contributes to a decrease in wasting, stunting and risks of obesity. The risks of not breastfeeding a child for long term results in cardiovascular diseases and obesity (Frank, Lych & Triplett, 2019).

The effects of not breastfeeding to mothers leads to an increased risk of post-partum depression. Mothers who breastfeed soon after birth have small chances of haemorrhages. Breastfeeding mothers also are helped to space their pregnancies due to temporal reduced fertility (WHO, 2015). Breastfeeding helps mothers to lose weight gained during pregnancy and the risks of having breast and ovarian cancers,

osteoporosis, diabetes, and cardiovascular diseases during the course of their lives (Frank et al., 2019).

2.17.3 Complementary feeding

According to WHO (2017), complimentary feeding refers to the time when breastmilk alone is no longer sufficient to cater for the adequate nutritional requirements of infants, other foods and other liquids are therefore introduced, the child is continually breastfed. Complimentary feeding is also referred to as the time between 6-24 months of age where there is the introduction of solids and semi solids and continued breastfeeding. Nutrients and energy needs starts to increase at the age of six months for the infant. Different kinds of meals that are nutritious and snacks are introduced in small proportions as complimentary foods for the child above six months of age (FAO et al., 2022).

The food for complimentary feeding should be nutritionally adequate, safe and should be fed appropriately to the child so as to meet the nutrients and energy needs (Mphasha et al., 2023). According to FAO et al., (2022), at this age the child starts to be more active using more energy, thus there is need to improve the child's dietary needs. The introduction of solids and semi aims at increasing nutrient intake so as to complete daily needs. Complimentary feeding also compliments a breast milk-based diet.

Problems arise when complimentary feeding is introduced earlier than six months. This is however as a result of lack of adoption and sustenance of complementary feeding practices. The child becomes susceptible to infectious diseases and other sicknesses (FAO et al., 2022). According to a study that was done in Bangladesh, early complimentary feeding is linked to malnutrition. This is due to the digestive system of

the child which would have been immature. However, there are reasons as to why mothers introduce solid meals to a child less than six months (Scott et al., 2020).

In Zambia, a study on malnutrition was carried out and revealed that mothers felt like breastmilk alone was insufficient to cater for the child. Other women indicated that they were busy such that they could not spend the whole day with their infants, in such cases they only breastfed their babies only when they got the chance to. They also indicated that for the greater part of the day, their infants were fed with thin porridge (Scott et al., 2020).

2.18 The need for nutrition interventions

Nutrition Intervention refers to designed and well-planned actions that are intended to cater for changing a behaviour or a problem that is nutrition related for an individual, a target group and or population at large (UNICEF, 2019). Undernutrition and micronutrient deficiencies plays a crucial role in mortality and morbidity of many children, especially children who are under the age of two (FAO et al., 2022). Nutrition interventions together with socio development measures therefore play a crucial role to reduce morbidity and mortality through dietary change and core practices. Nutrition Interventions are implemented at different levels, for example at individual level, local and national level (Frumence et al., 2023). National nutrition intervention involves educational campaigns that are done to improve the knowledge, attitudes of people and also involves the fortification and supplementation of food (UNICEF et al., 2023).

Zimbabwe implemented the evidence-based nutrition interventions which are integrated with different collaborations. These interventions include maternal iron, folate, Vitamin A, iodine and calcium supplementation, use of insecticides, treated nets for malaria, family planning and adequate birth spacing, nutritional care and support

for pregnancy and lactating mothers in emergencies (ZNNS, 2018). The Ministry of Health and Child Care, is taking the lead in the implementation and use of the strategies together with other organizations, looking at the coordination of the Food and Nutrition Council, bringing in other development partners like the local NGOs, private sectors and UN agencies together with the communities (Koyratty et al., 2022).

The nutrition status of citizens of Zimbabwe can be improved by reducing malnutrition through utilization of international and national laws, policies and proven international and local based actions (ZNNS, 2018). The Government of Zimbabwe aims at ensuring nutrition security through the implementation of nutrition interventions that are well versed with public health actions, for example, health services, water and sanitation activities (Matsungo et al., 2023).

2.19 Malnutrition and its causes

Literally malnutrition refers to "poor nutrition" and technically refers to over nutrition and under nutrition (Kalu & Etim, 2018). In this study, malnutrition refers to under nutrition. Under nutrition is the major issue of concern especially in developing and it is regarded as the major underlying cause of 45% of death for children under the age of 5 years (Govender et al., 2021). This is however as a result of nutritional deficiencies in early childhood leading to growth that is inadequate, and in turn reduces the normal brain development. This also results in mental retardation leading to a lifetime of diminished earning capacity and a greater risk of diseases (Mphasha et al., 2023). If nutritional deficiencies are not treated in early childhood, the intellectual, health and human capital problems are irreversible. These issues are addressed by exclusive breastfeeding babies under six months and the introduction of complimentary foods at six months (UNICEF, 2023b).

Malnutrition in children is as a result of poor infant and young child feeding practices of under two children (FAO et al., 2022). These poor infant and young child feeding practices include wrong timed introduction of solid and semi solid foods which could be too early, for example, two or three months and introducing these foods very late like nine to ten months (Matsungo et al., 2023). Estimates shows that 3.1 million children are dying annually due to undernutrition. The increase in the improvement of infant and young child feeding practices is one of the best ways to reduce malnutrition cases as well as enhancing health, growth and development of a child. Thus, the need for nutrition interventions (UNICEF, 2023a).

In Zimbabwe and some other countries around Africa, several efforts and strategies have been put in place in a bid to reduce the problem of malnutrition (Matsungo et al., 2023). The table below shows the framework that the Ministry of Health and Child Care and the United Nations are using as an action and a means of identifying the causes of malnutrition, as well as prescribing the appropriate interventions:

Table 2.1: Framework for identifying causes of malnutrition: Adapted from the journal article titled "Implementation and maintenance of infant dietary diversity in Zimbabwe: contribution of food and water insecurity" (Koyratty et al., 2022).

Priority areas	**Interventions**
Improve breastfeeding and complementary feeding Increase micronutrient intake	● Early initiation of breastfeeding ● Exclusive breastfeeding ● Complementary feeding ● Vitamin A supplementation and fortification ● Iron folate supplementation and fortification ● Zinc in ORS for diarrhoea treatment ● Iodine fortification ● Micronutrient Powders ● Consumption of micronutrient rich foods

Improve diarrhoea and parasite Control	● Household water treatment ● Hand washing with soap and water ● Food safety and hygiene ● Insecticide Treated Nets (ITN) distribution ● Intermittent Preventive Treatment for pregnant women (malaria) ● Deworming
Treat acute malnutrition	● Treatment of <5 children with SAM ● Treatment of < 5 children with MAM
Improve Household food security	● Household Food production ● Consumption of diversified foods ● Food processing and value addition ● School feeding ● School gardens ● Kitchen gardens ● Food/Cash for work, Cash transfer ● Blanket feeding for <2s ● Blanket feeding for lactating and pregnant women ● Supplementary feeding for malnourished Lactating ● &Pregnant women, all pregnant teenage girls and ● mothers with multiple births
Improve maternal nutrition	● Family Planning ● Nutrition education
Improve nutritional status of PLHIV/AIDS/TB/OVCs & reduce prevalence of NCDs	● Nutrition for PLHIV/AIDS/TB & OVCs ● NCDs preventive measures

The adoption and sustenance of good health and nutrition behaviours is effective in reducing undernutrition in children under the age of five (Govender et al., 2021). Behaviour changes interventions that include education on maternal and child nutrition, feeding support, and community mobilization have been found to be effective in improving child nutrition outcomes (Scott et al., 2020). The sustainability of these interventions is crucial in ensuring that the gains made are not lost. Strategies such as community mobilization, behaviour change communication, monitoring and

evaluation, and policy and program support are essential in sustaining good health and nutrition behaviours (UNICEF, 2023a).

The findings from the studies reviewed highlight the importance of adopting good health and nutrition behaviours in reducing undernutrition and improving child health outcomes. Further research is needed to identify the most effective strategies for sustaining good health and nutrition behaviours in specific populations and contexts.

2.20 Summary

This chapter was mainly focusing on related literature on adoption and sustenance of health and nutrition behaviours in reducing undernutrition of children under the age of five in Buhera district. This chapter covered the theoretical framework which guided the investigations.

CHAPTER 3 METHODOLOGY

3.1 Introduction

The research methodology in this study was used to answer the key research questions. This chapter comprises the research design, research population, sample size, sampling method and data collection process.

3.2 The Research Design

The research used a cross sectional design study to assess the health and nutrition practices, and its relationship to the knowledge and attitude of the caregivers in Buhera district. A mixed-methods approach was used in this study as it allows for the collection of both quantitative and qualitative data. The use of surveys and questionnaires provides numerical data on the knowledge, attitudes, and practices of caregivers and program implementers. At the same time, qualitative methods such as interviews and focus group discussions provides more in-depth insights into the factors contributing to the lack of adoption and sustenance of health and nutrition behaviours, as well as the challenges faced by program implementers. Additionally, a mixed-methods approach helped to capture the perspectives of different stakeholders and provided a more nuanced understanding of the issue.

Study site

Buhera district is located in the Manicaland Province of the Eastern Highlands of Zimbabwe. There are 33 wards in this district. These wards are subdivided according to their rainfall and climate / agro-ecological zones patterns as shown below:

Ward 1 to 10: Region 2 which is associated with high rainfall, warm weather

Ward 11to 18: Region 3, associated with low rainfall and hot weather

Ward 19 to 33: Region 4 which is associated with very low, unpredictable rainfall and high temperatures

Chabata, Ward 29 is in region 4 with very low and unpredictable rainfall. Thus, people in the area are less food secure. Food insecurity results in reduced dietary intake, hence undernutrition.

Below is a map showing the ward boundaries of Buhera District and this shows where Chabata is located.

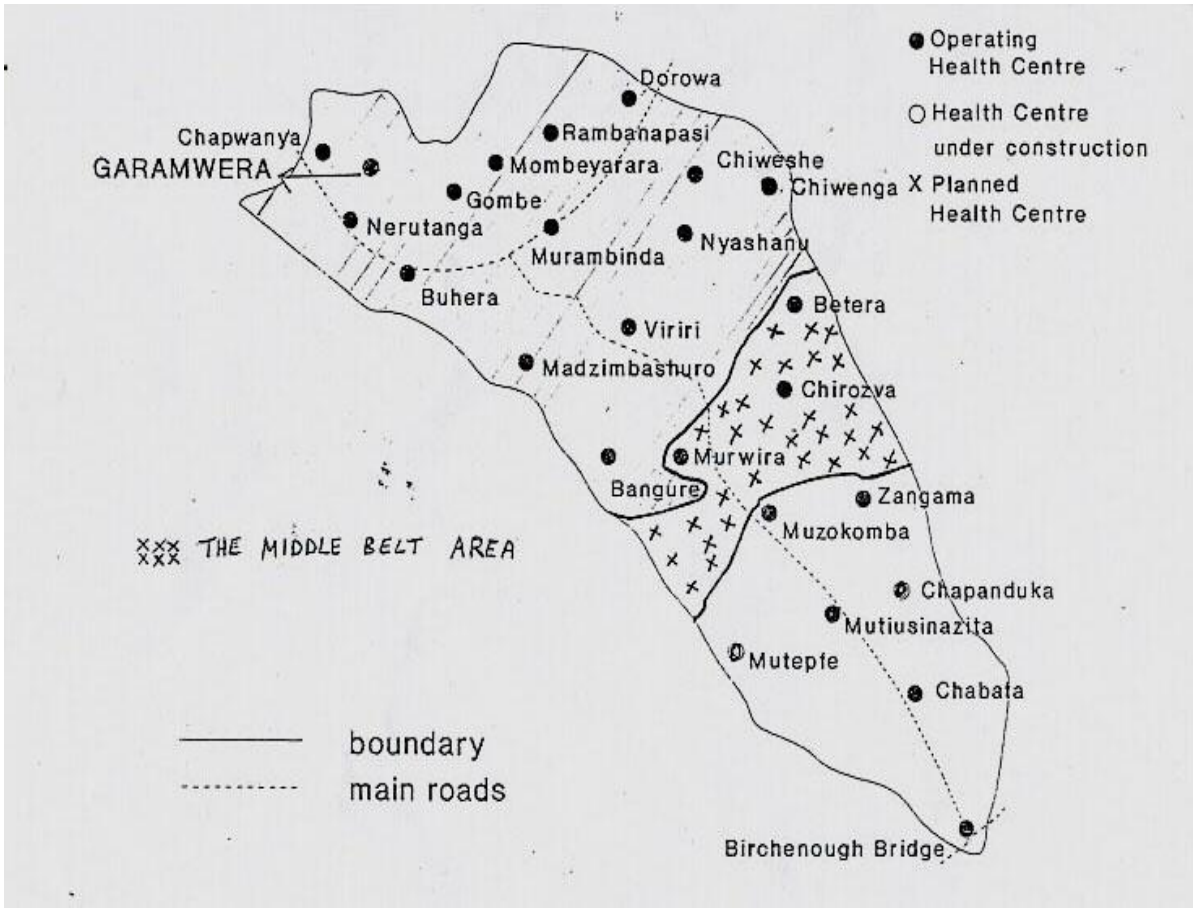

Figure 3.1: Health facilities in Buhera District: Adopted from (MOHCC Buhera, 2016)

There is a nutrition and behaviour change intervention programme that is currently operating in Buhera district. They are few agricultural activities in most wards (ward 19 to 33) as a result of low rainfall. Only resistant crops are grown in Ward 29, these crops are sorghum, millet, round nuts, their cattle, goats and sheep thrive to survive. The area is very close to Birchenough Bridge where a few irrigations schemes are done and some crop exchange with maize are done as well. However, the current El Nino induced drought led to the uniform food insecurity in the district, hence the agro-ecological zones do not show in the current 2015-2016 farming season. (AGRITEX Buhera, 2016), (Food Security Rapid Assessment 2016 Preliminary results).

3.3 Population and Sampling

According to Cohen et al., 2004, population of study refers to the elements or group of individuals which an investigator can select a sample. The total population of Buhera district estimates to 242664 people, from the previous census (ZIMSTAT, 2022). In this research the population groups are Caregivers of children under the age of two and the project implementer's staff (Takunda Project, CARE International). First- hand information was collected from the caregivers of children below 2 years of age. Key Informant interviews were held with current operating intervention organisation (Care international staff), they were also administered with questionnaires.

To identify the key knowledge, attitudes, and practices on health and nutrition behaviours by caregivers of children under the age of five, stratified random sampling was used to select a representative sample of caregivers of children under five in Buhera district. The sample was stratified by geographic location, age of children. Purposive sampling was used to select caregivers who have participated in health and

nutrition programs in Buhera district or who have received nutrition-related messaging through other channels. In order to identify the key knowledge, attitudes, and practices on health and nutrition behaviours by program implementers, convenience sampling is used to select all program implementers who have been involved during the specified time period. To determine the factors contributing to the lack of adoption and sustenance of health and nutrition behaviours by caregivers of children under the age of five, random sampling to select a representative sample of caregivers of children under five in Buhera district.

3.3.1 Sample Size

The formula of sampling for continuous variable measurements reported by Cochran has been widely used by many researchers. The estimation of minimal sample size for a representative household sample analysis in this study was calculated using the equation:

$$n = \frac{Z^2 * p(1-p)}{d^2}$$

Where: n = required sample size

Z = confidence interval

P = percentage of households selected, expressed as a decimal

d = confidence interval or accepted margin of error expressed as a decimal

For surveys of the population (N), it is imperative to reach at least 5% of the households in the study area (Jubayer et al., 2022). The required sample size (n) of household was selected from 4 strata (villages) of the study area. This ensured results representativeness and information reliability resulting from the final result. A 95%

confidence interval was used; thus, the margin of error was ±5%. Using the calculation above,

$n = \frac{(1.96)^2 * 0.5(1-0.5)}{(0.05)^2}$ = 285 households; which indicates that a minimum of 285 households sampled to arrive at an accurate result.

3.4 Data collection instruments

The researcher made use of interviews, focus group discussions and physical observations as data collection instruments.

Questionnaire: The standard questionnaire of IYCF assessments (complementary feeding and breastfeeding) by WHO, (2013) was used. Other questions to collect data characteristics of the sample were developed and administered to the interviewers. These questions provided with information on caregiver's knowledge on feeding practices of their children.

Interviews: Interviews are usually conducted in person, over the phone, or via video conferencing to collect detailed information about an individual's health and nutrition behaviours. In this case, the researcher used face to face interviews.

Focus groups: Focus groups are an effective way to collect qualitative data on health and nutrition behaviours. Participants were brought together in a group and asked a series of questions about their behaviours and attitudes towards health and nutrition.

Observations: Observations are usually used to collect data on actual health and nutrition behaviours in real-life settings. This was done through direct observation and using a checklist form.

3.5 Data Collection Procedure

Step 1: Identified the study population

In this case, the study population were caregivers of children under the age of five and program implementers of Takunda project in Buhera district.

Step 2: Determined the sample size

The sample size was calculated and determined. Participants were then selected using a random sampling method/ purposive sampling method, based on the research objectives and available resources.

Step 3: Conducted surveys/questionnaires

Surveys/ questionnaires were used to collect quantitative data on the knowledge, attitudes, and practices of caregivers and program implementers related to health and nutrition behaviours.

Step 4: Conducted interviews

Interviews were used to collect qualitative data on the factors contributing to the lack of adoption and sustenance of health and nutrition behaviours by caregivers and program implementers. These interviews were conducted in person.

Step 5: Collected secondary data

Secondary data was collected from sources such as reports, program documents, and health statistics to supplement the data collected through surveys and interviews.

Step 6: Analysed the data

The quantitative data collected through surveys was analysed using statistical software such as SPSS and excel.

Step 7: Interpret the findings

The findings from the analysis were interpreted to draw conclusions about the key knowledge, attitudes, and practices related to health and nutrition behaviours among caregivers and program implementers in Buhera district. These findings were also used to identify challenges and opportunities for improving health and nutrition behaviours in the district.

Inclusion and exclusion criteria

Inclusion Criteria

The study was conducted in a low-middle income district and drought prone area, among individuals or communities at risk of undernutrition, included pregnant and lactating women, infants, and young children.

Exclusion Criteria

The study did not include chronically ill patients and elderly people. The study did not collect data from any other institution that is not CARE International and Ministry of Health and Child Care

Variables

The dependent variable for this study were the caregivers, program implementers and health and nutrition behaviours. The independent variables such as eating a balanced diet, drinking clean water, and practicing good hygiene.

Study participants characteristics

Once the criteria for inclusion and exclusion have been identified, there was a need to categorize study participants based on these characteristics,

- Age (e.g., children under five),
- Gender (e.g., male, female),
- Socioeconomic status (e.g., low-middle income),
- Study participation in the Takunda Project (e.g., participants receiving trainings and education on good health and nutrition behaviours).

These categories were used to analyse the data and draw conclusions about the adoption and sustenance of health and nutrition behaviour in reducing undernutrition in the target population.

3.6 Analysis and Organisation of Data

Software packages SPSS version 21, and excel were used to analyze quantitative data using statistical tests. A narrative analysis was conducted for qualitative data which typically involved analysing the stories or narratives that participants were telling during focus group discussions. Graphs and tables were used.

3.7 Ethical Consideration

The researcher got approval from CARE International, and the District Administration Office. The study was also approved from the college, (AUREC). Participants were on voluntary basis and the researcher had to be consented by the participants if they were willing to partake. Every participant's confidentiality was well kept and maintained.

Confidentiality of participants

Confidentiality is a critical aspect of any research involving human participants. When conducting the study on adoption and sustenance of health and nutrition behaviours in reducing undernutrition in Buhera district, Zimbabwe, the researcher took some measures to ensure confidentiality protecting the privacy and confidentiality of the participants. Confidentiality is important because it fosters trust and encourages participation, which is essential for the success of any research study. Before enrolling participants in the study, the researcher provided them with clear information about the study, its purpose, procedures, and potential risks and benefits.

The researcher obtained informed consent from each participant, which included information about confidentiality and how their data will be used. The researcher ensured that the consent process was voluntary and that participants were free to withdraw at any time. To protect the privacy of participants, the researcher used anonymous identifiers rather than using the participants' names. The use of anonymous identifiers ensures that no one, including the researcher, can identify the participants in the study.

The researcher stored the data collected from participants in a secure location, such as a locked cabinet. The researcher ensured that the data was accessible only to authorized personnel and that it was not disclosed to third parties without the participant's explicit consent. When analysing the data, the researcher ensured that the results did not reveal any personal information that identifies participants. The researcher also ensured that the data is presented in a manner that protects the anonymity of the participants.

3.8 Summary

In conclusion, disseminating research results is a critical aspect of any research study as it enables the researcher to share their findings with the wider community and

contribute to knowledge in their field. When disseminating the results of a study on adoption and sustenance of health and nutrition behaviours in reducing undernutrition in Buhera district, Zimbabwe, the researcher used several methods to ensure that the findings reach their intended audience. The researcher presented findings at academic conferences relevant to health and nutrition field. This enabled to share the research with other researchers, scholars, and experts in the field, receive feedback, and engage in discussions about the study. The researcher also organized some workshops and seminars to share findings with relevant stakeholders, such as community leaders, health workers, and nutritionists. These events were also used to engage stakeholders in discussions about the study's findings and implications for their work.

CHAPTER 4 DATA PRESENTATION, ANALYSIS AND INTERPRETATION

4.1 Introduction

This chapter presents the results of the study and the discussion. The results include the demographic characteristics, the barriers to the adoption and sustenance of the nutrition interventions, the factors associated with the barriers, knowledge on health and nutrition by caregivers of children under the age of five and the program implementers. The data was analysed and the findings are presented in diagrammatic and written form. The data was presented using bar graphs, and tables, these allow for a good visual impression of the findings hence the data is easily and quickly understood.

4.2 Data Presentation and Analysis

This includes socio demoraphic characteristic, factors affecting program interventions, caregiver's familiarity with the program being implemented, feeding practices, Caring practices, Impact of COVID 19 and Cyclone Idai.

4.2.1 The socio- demographic characteristics of the research population

Table 4.1: Demographic data for successfully sampled caregivers

Age	Total Number (N=270)	Percentage (%)
<20	108	40
Between 20 to 25	89	33
Between 26 to 35	72	27
MARRITAL STATUS		
Married	163	60.4
Divorced	68	25
Single	39	14.6

LEVEL OF EDUCATION		
Primary Education	146	54.2
Secondary Education	96	35.4
Tertiary Education	28	10.4

The study successfully sampled a total of 270 caregivers of children under the age of five from Buhera District. Table 4.1 shows that 40% of the caregivers are less than 20 years of age, 33% of them are aged between 20 to 25 years and 27% are aged between 26 to 35 years. It is also shown in the table that, 60.4% of the caregivers are married and 25% are divorced. 54.2% of the caregivers' highest level of education was primary school, 35.4% was secondary school and 10.4% reached tertiary level

4.2.2 Factors affecting program interventions

From the study participants from the current health and nutrition implementing program, they indicated that more than six health and nutrition interventions have been repeatedly implemented in Buhera district for the past 15 years up to date. Among these interventions mentioned were, exclusive breast feeding for children below six months, complimentary feeding from seven months, handwashing at all critical times, dietary diversity, meal frequency, growth monitoring visits, immunisation and vaccination programs. As indicated in figure 4.1, 93.8% of the program implementers indicated that health and nutrition interventions have posed a positive impact to Buhera district and 8.2% indicated that there were of no positive impact made to Buhera district, since the figures of undernutrition are highly fluctuating.

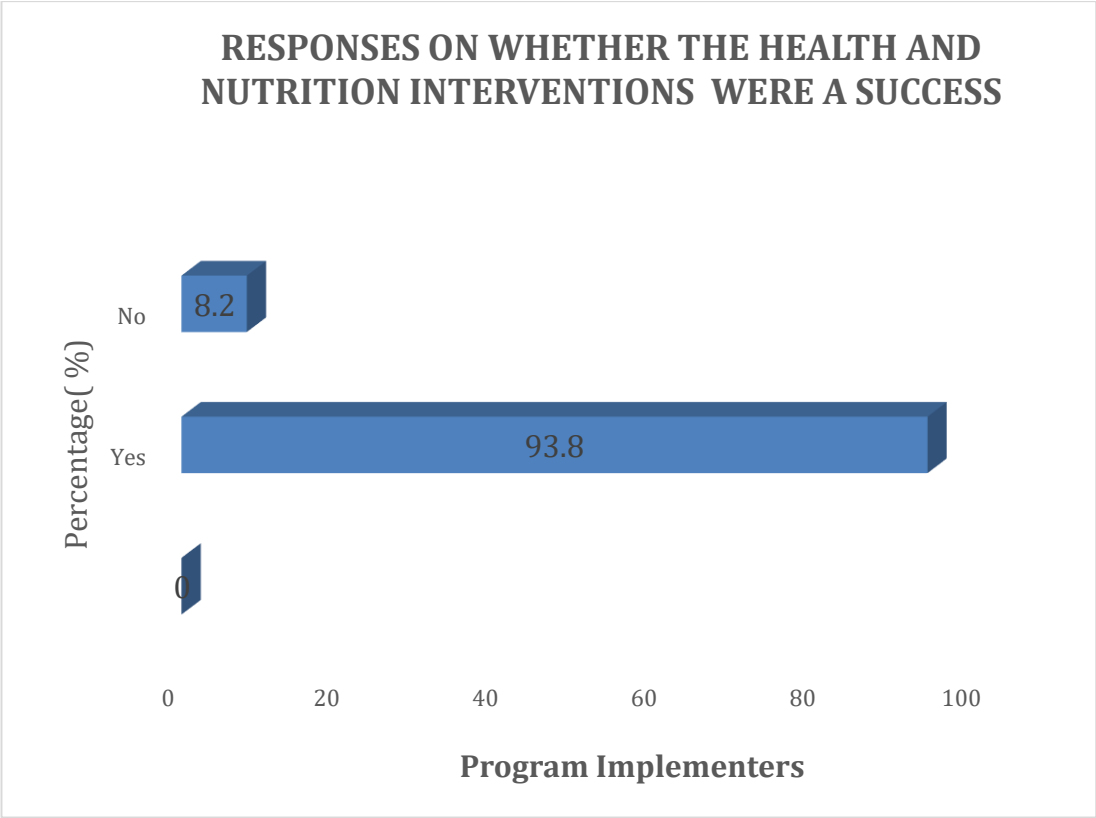

Figure 4.1: Responses from program implementers on whether or not the health and nutrition interventions had a positive impact in Buhera District

4.2.3 Perceived challenges faced by communities in adopting and sustaining Health and nutrition behaviours

The program implementers have however mentioned some of the major challenges to the lack of adoption and sustenance of good health and nutrition behaviours. All 15 respondents mentioned that when each program ends, the communities are lacking continued support and this is however leading to the drop or lack of adoption and sustenance of good health and nutrition behaviours that they would have been taught. The other major challenges perceived were culture and religion leading with 28%. The respondents also indicated that natural disasters have also contributed to the lack of adoption and sustenance of health and nutrition behaviours as shown in table 4.2.

Table 4.2: Challenges faced by communities

Major challenges	Total Number (N=15)	Percentage (%)
COVID 19	3	19
Culture and Religion	4	28
Poverty	1	7
Patriarchy	1	6
Cyclone Idai	3	18
Drought	3	22

4.2.4 Challenges being faced by program implementers

The current program implementers have mentioned that they also face some challenges in delivering health and nutrition behaviours to the communities, especially in hard-to-reach areas. The challenges indicated were limited infrastructure where they could stay in the communities, limited funding, limited access to healthcare facilities by communities, limited access to nutritious food by the communities and also some security concerns, for example, 2023 is a year of elections and some of the activities of program implementers are affected.

4.2.5 Caregivers' familiarity on the health and nutrition behaviours being implemented

All the sampled participants (N=285), were familiar with the nutrition interventions promoted. They reported that they are benefiting positively from these nutrition interventions coming to them through different organizations. These nutrition interventions were delivered in different forms by the current operating organization. Nutrition interventions were mainly brought to the caregivers through trainings in health and nutrition, health promotions, home visits, in specific areas. Other areas were

accompanied by home visits and health promotions. 52% of the caregivers reported that these nutrition intervention massages are brought to them through health and nutrition trainings. 24% reported on messages delivered to them through health promotions. 11% indicated on health promotions, home visits and trainings. 13% reported that these nutrition interventions are coming to them through health promotions, Health and nutrition trainings, and home visits.

Table 4.3: Forms of delivery of the nutrition interventions

Forms of delivery	**Total Number (N=285)**	**Percentage %**
Health Promotions	69	24
Health and Nutrition trainings	148	52
Health promotions, home visits and trainings	31	11
Health Promotions and home visits	37	13

As shown by the graph in Figure 4.2, the rate at which the caregivers adopt the nutrition interventions varies due to certain factors affecting them. An intervention on the consumption of iron rich foods (22.9%) was adopted to a larger extent. 20.8% of the caregivers adopted dietary diversity. 18.8% represents caregivers' percentage who adopted handwashing and dietary diversity. Handwashing was adopted by 14.6% of the caregivers. 12.5% represents those who adopted complementary feeding practices. The least adopted and implemented nutrition intervention is meal frequency with 8.3%. 2.1% represents caregivers' who adopted meal frequency and consumption of iron rich foods.

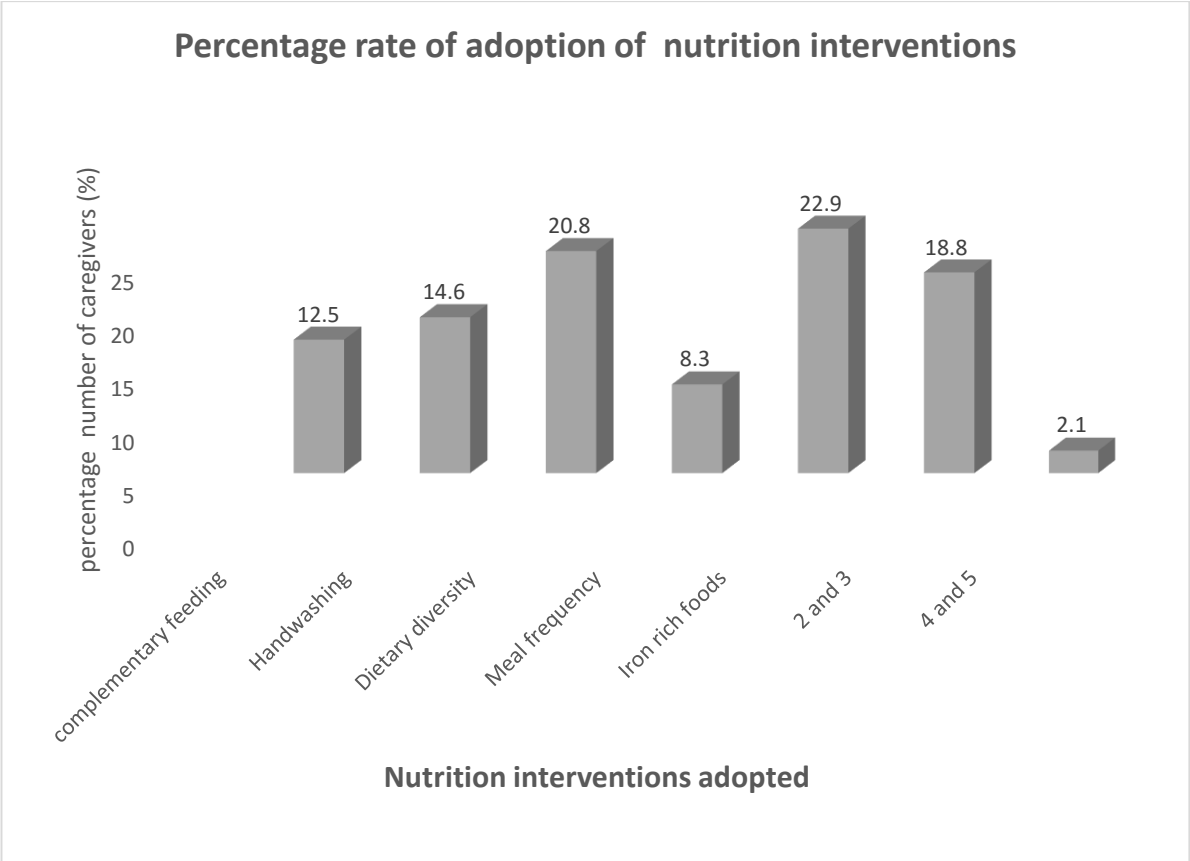

Figure 4.2: Percentage rate of nutrition intervention activities adopted by the caregivers

4.2.6 Feeding Practices

The main feeding practices being promoted by the program implementers included, breastfeeding, complimentary feeding, meal frequency, dietary diversity and consumption of iron rich foods.

The level of education was found to be of major influence on the breastfeeding practices. The relationship between the level of education and breastfeeding practices were measured by Pearson product-moment correlation coefficient. There was a weak negative correlation between the variables, level of education and the breastfeeding practices, ($r=-0.196$, $n=48$, $p< -0.181$).

Knowledge of caregivers on EBF affects what they put into practice on duration period of EBF. Results have shown that there was a positive, medium correlation between the knowledge of caregivers on EBF and duration practice on EBF by the caregivers, ($r=0.498$, $n=48$). There is a correlation significant at $p<0.001$.

Family pressures were seen to have influence on the mother's breastfeeding practices. The relationship between the mother's breastfeeding practices and family support about breastfeeding were measured. The results showed that there was a negative correlation between the variables, ($r=-0.536$, $p=0$, $n=48$). The correlation significant was at 0.01.

The number caregivers who exclusively breastfed their babies for six months were 25%. (35.4%) of the caregivers stopped EBF at 2 months. Most of the caregivers stopped EBF at 4 months (39.6%) as shown by the graph below. The figure 4.3 shows the percentage number of mothers who exclusively breastfed their babies on different varying rates.

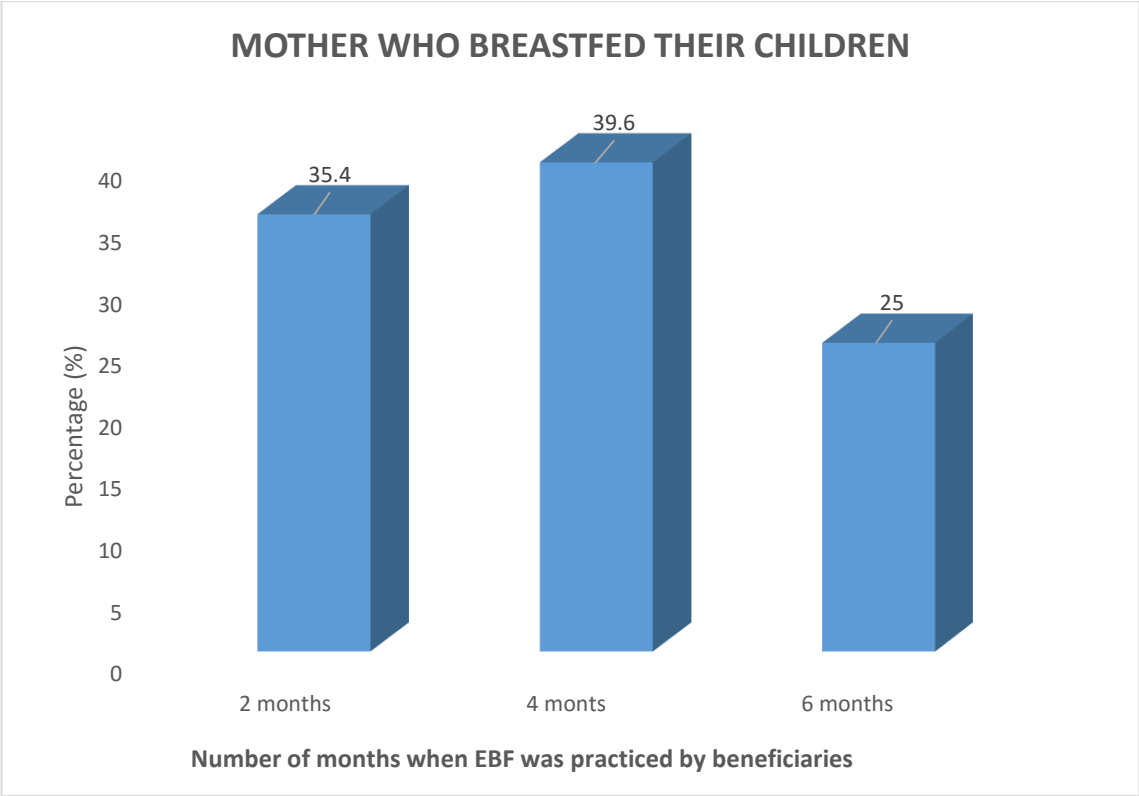

Figure 4.3: Percentage number of mothers who exclusively breastfed their babies on different varying rates

Children between 6 to 11 months continued to be breastfed with the percentage rate of (80%). For children between 12 to 18 months the rate dropped to (40%). 32.5% was for the children between 18 to 24 months. The percentage of children who were breastfed above 24 months were (12.6%) as shown by figure 4 below:

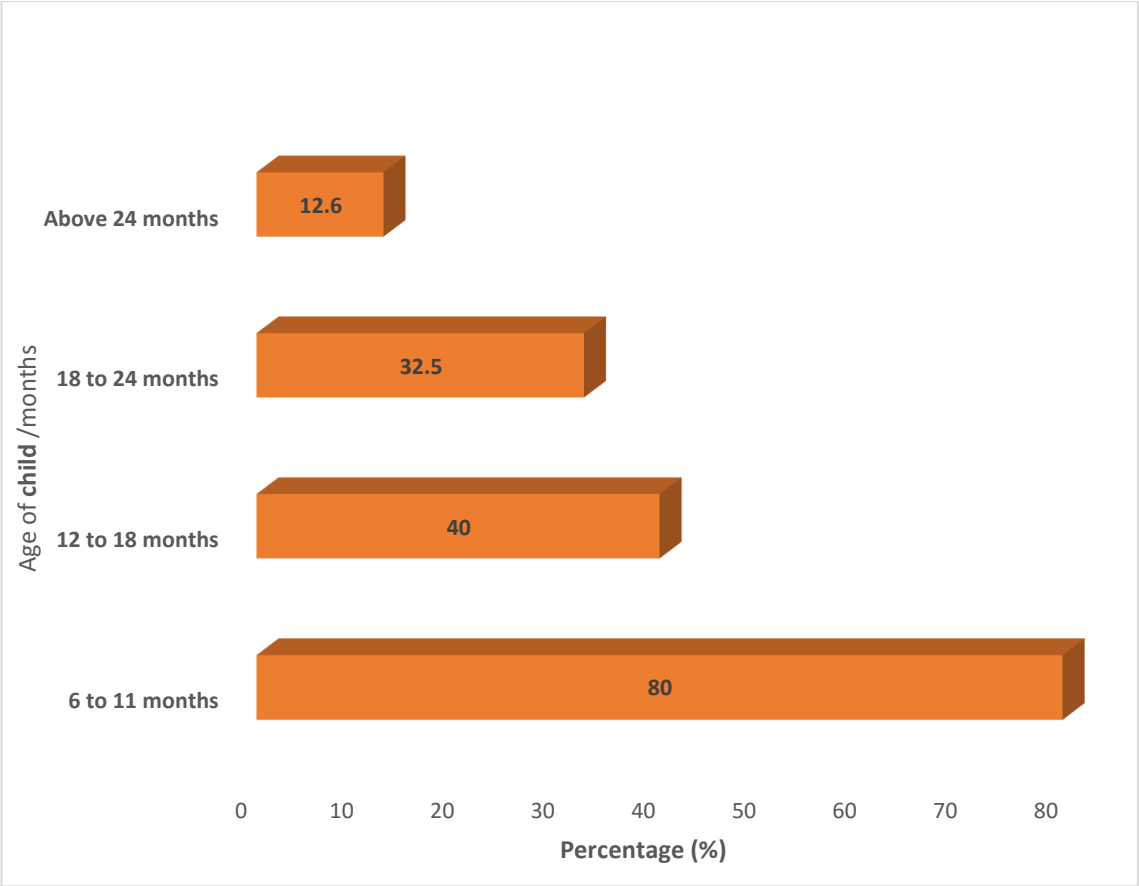

Figure 4.4: Prevalence number of continued breastfeeding

4.2.7 Complimentary Feeding Practices

The relationship between caregiver's practice of initiation of solid foods and caregiver's knowledge on the initiation of complementary was measured. The correlation significant was at 0.001 level, (r=0.663, p=0, n=48). The results show that there is a large positive correlation between the variable.

Caregiver's knowledge on dietary diversity and dietary diversity practice was also measured. There was a medium negative relationship between the dietary diversity practice and knowledge of dietary diversity of the caregivers, (r=0.458, p=0.001, n=48)

Figure 4.4 below shows that more children were fed twice a day (33.3%) while 29.2% were fed 3 times a day. 20.8% were fed once a day. 10.4% of children were fed 4 to 6 times a day and the least number of children (6.3%) were fed on demand

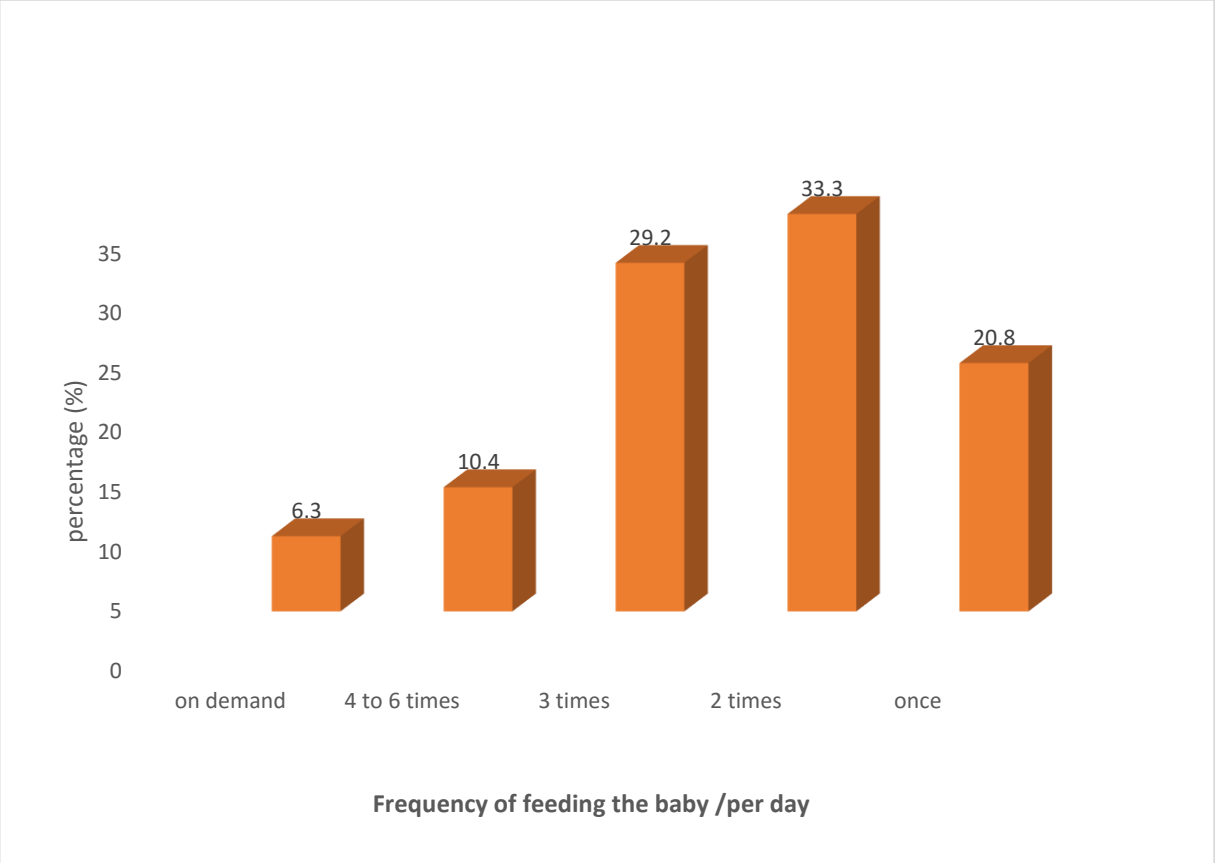

Figure 4.5: Number of times the children were fed per day

The results shown in table 4.4 indicate that 60% of 6 to 8 months babies consumed iron. 51.4% of children within 19 to 24 months consumed foods rich iron. (49.5%) between 12 to 18 months and (41.4%) of children between 9 to 11 months consumed iron rich foods and iron fortified foods.

Table 4.4: Percentage number of children who consumed iron

Age	Total Number (N=285)	Percentage of children who consumed iron (%)
6 to 8 months	171	60
9 to 11 months	118	41.4

12 to 18 months	141	49.5
19 to 24 months	146	51.4

All the children (100%) were given foods rich in carbohydrates (roots, tubers and grains). 60.2% consumed dairy products, 59.4% of children were given foods rich in vitamin A. the least group of foods that was introduced was fruits and vegetables (34.7%)

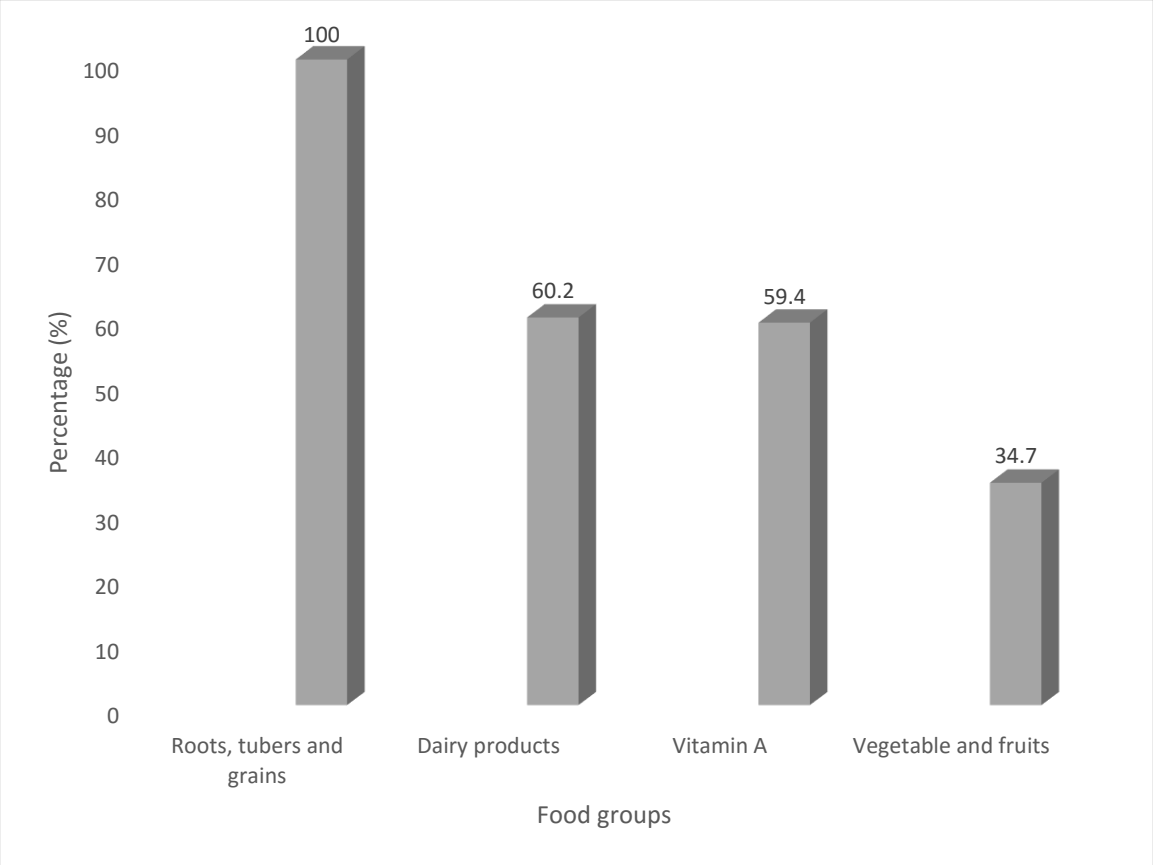

Figure 4.6: Food groups consumed by the children

4.2.8 Caring practices - water treatment and critical handwashing times

The relationship between drinking water sources and water treatment (boiling) was measured by and the results shows that there was a small positive relationship between the variable (r=0.178, p=0.227, n=48). These results in diarrheal illnesses in the area.

(72.5%) of the caregiver reported on diarrheal illnesses of their children within the previous six months.

The caregivers indicated their critical handwashing times as shown in table 4.5. 31.1% of the caregivers wash hands after using the toilet. 21.7% of the caregivers wash their hands at five critical handwashing times.

Table 4.5: Critical handwashing times from the caregivers of children under the age of two

Handwashing Times	**Total Number N= 285**	**Percentage number (%)**
Before eating	62	21.7
Before feeding the baby	12	4.2
After using the toilet	89	31.1
Before preparing or handling food	23	8.1
After removing a nap/ cleaning a baby who has defecated	100	35
All the above	62	21.7

The use of long handled cups to draw water from the 20 litre buckets (for water storage) is another form of caring practice. Only 38% of the total population used long handled cups to draw water from the 20 litre buckets and the remaining 62% did not use long handled cups. Table 4.6 below shows the number of people who used long handled cups and those who did not.

Table 4.6: Percentage number of people who used long handled cups

Description	**Total Number (N=)**	**Percentage Number (%)**

Yes (Long handled cups)	108	38
No (Short handled cups)	177	62

Poor sanitary conditions are other factors leading to diseases that leads to malnutrition. Good Sanitary conditions involves zero open defecation and the use of BVIPs (Blair Ventilated Improved Pit-latrine. As shown by the table 4.7, 32% of the total population of the caregivers had improved sanitary conditions. 68% had unimproved sanitary conditions.

Table 4.7: Sanitary conditions

Description	Total Number (N=)	Percentage rate (%)
Improved sanitary conditions (BVIP)	108	32
Unimproved sanitary conditions (No BVIP, Open defecation)	177	68

4.2.9 Religious factors

These are the other factors influencing the lack of adoption and sustenance of good health and nutrition behaviours. As shown by the table 4.8, Buhera district is mainly populated by apostolic sects, the results showed that 68% of the care givers were from Johane Marange Apostolic Church, 32% of the caregivers were from other churches e.g Roman Catholic, SDA, Pentecostal and Methodist church.

Table 4.8: Percentage number of caregivers from apostolic sects and other churches

Description	Total Number (N=)	Percentage Number (%)
Apostolic Sect (Johanne Marange)	177	68

Other Churches	108	32

4.3 Discussion and Interpretation

In this section, the key results of the study are presented. The key findings are discussed and interpreted along with other findings from different research studies. The section focuses on the caregiver's adoption and sustenance of health and nutrition behaviours / interventions. The way in which the nutrition interventions are promoted by the current operating nutrition intervention program and the MOHCC (Ministry of Health and Child Care) were also highlighted in this section. Barriers or challenges to the adoption and sustenance of the nutrition intervention activities are included. The discussion of the results are as follows.

4.3.1 Caregiver's knowledge, attitude and practices

Maternal knowledge, level of education, socio demographic, cultural factors and maternal knowledge influences breastfeeding practices (Victor et al., 2016). Caregiver's knowledge, attitude and practice influence breastfeeding practices. There was a negative correlation between the variables between the level of education and the breastfeeding practices, ($r= -0.196$, $n=48$, $p< -0.181$). The level of education affects the knowledge of breastfeeding practices of caregivers. The higher the level of education the higher the adoption and sustenance of breastfeeding practices.

These results sync to those of the NDHS 2015 survey where mothers with high educational level had initiated breastfeeding within the first hour of birth. The results are also similar to a study that was done by Nepal Demographic Health Survey in (2017). Nepal Demographic Health Survey in Nepal (2011), reports that early

initiation of breastfeeding was high among mothers with secondary/ tertiary education as compared to those with no education.

Smith, Brown & Jones, (2022) conducted a study to investigate the relationship between level of education and breastfeeding practice in Africa. The study utilized a cross-sectional design and collected data from 1000 women across five African countries. The results indicated that women with higher levels of education were more likely to initiate breastfeeding within the first hour of birth, exclusively breastfeed their infants for six months, and continue breastfeeding for up to two years compared to those with lower levels of education. The study provides evidence for negative relationship between maternal education and optimal breastfeeding practices in Africa. The findings suggest the need for targeted interventions to increase awareness and education on the benefits of breastfeeding among women with lower levels of education.

According to Victor et al., (2016) the mothers did not practice breastfeeding practices because they did not understand the signs of a child wanting to take in solid or semi solid foods and water, they also regarded breastmilk as inadequate for the child, hence they did not consider the healthcare professionals' advice. When health messages are being taught or promoted, the healthcare professionals should be more concerned and take special attention to mothers who are less educated or those not educated at all. Victor et al., (2016). According to Pawan and Vishnu (2015), there should be breastfeeding promotion strategies such as counselling and peer education to targeted uneducated mothers.

The results from this research shows that there was a positive medium correlation between the knowledge of caregivers on EBF and duration practice on EBF by the

caregivers, (r=0.498, n=48). There is a correlation significant at p<0.001. The knowledge of the caregivers on breastfeeding results in what they put into practice, the knowledge that the caregivers have on EBF works hand in hand with what they put into practices despite other social and cultural factors that would affect them. Community and family pressures often affect negatively the mothers of Buhera district. The caregivers reported that as they continue on EBF, they tend to get thin, hence the milk becomes insufficient for the baby.

Most of the mothers reported that the child should be weaned at 4 months and start introducing complementary foods. The caregivers also indicated that breastmilk alone is not enough for the child during the first months after birth, there is need to introduce water to the baby as early as possible. They also indicated that they cannot continue with EBF as their husbands would want them to get pregnant when the baby reaches 4 months, they indicated that's what they believe and encouraged from their church, (Apostolic Sects). These results are similar to a study that was done among Ghananian rural lactating mothers on knowledge, attitudes and determinants of EBF (2016), with a p value of p<0.001).

In some instances, it was found out that the caregivers who did not go to any level of education found it difficult to adopt to the new breastfeeding practices coming to them. They concentrate more on old habits that they grew up knowing. Most of the mothers in Buhera district were affected by cultural factors on breastfeeding practices. They indicated that they only listen to what they have been taught by their elders (mothers and grandmothers) on breastfeeding practices. They indicated that listening to other teachings from healthcare professionals would be a sign of disrespect to their elders. They reported that colostrum is dirty and they cannot feed their children from that dirty

milk. They also reported that it is a taboo in their culture to give the child colostrum as the child would get sick.

A study was conducted by Adejumo & Okedo-Alex, (2021) to examine the relationship between caregivers' knowledge and breastfeeding practice in Nigeria. The study found that caregivers who had more knowledge about breastfeeding were more likely to engage in recommended breastfeeding practices. In particular, caregivers with greater knowledge were more likely to initiate breastfeeding within the first hour of birth, exclusively breastfeed for the first six months, and continue breastfeeding for up to two years or more. The study used a cross-sectional design and collected data from 300 caregivers of infants aged 0-6 months in a rural community in Nigeria. The data was collected using a self-administered questionnaire that assessed the caregivers' knowledge and breastfeeding practices. The findings of this study highlight the importance of educating caregivers about the benefits of breastfeeding and providing them with accurate information to help them make informed decisions about infant feeding. This could ultimately lead to improved infant health outcomes.

There was a large negative correlation between the variables, family pressures and breastfeeding practices (r=-0.536, p=0, n48). With correlation significant at 0.01. The higher the family pressures, this results on an increase in breastfeeding practices. A negative influence from the family results in negative practice in breastfeeding, and vice versa.

The findings of this study through focus group discussions showed that other factors influencing breastfeeding practices are socio cultural norms, maternal age, marital status, places of delivery, income and job seeking. Caregivers' in Buhera district reported that they leave their children at home as soon as they reach 4 months of age

for job seeking, (maricho) and illegal gold mining. The children are left home with other members of the family. This is however similar to the findings of Noah and Kumi-kyreme, (2013).

According to Dewey and Brown (2002) and WHO (2003), EBF for the first 6 months is a practice that is encouraged or recommended and helps the child to grow and develop fully. Breast milk contains all the nutrients in their right proportions, and it should be continued up to 2 years of the child's life. In Buhera district, the number of caregivers who exclusively breastfed their babies was 25%. These results tallied with the study done by (Lauer, 2004) as it is indicated in his study that EBF in Africa is very low is 25%. Most of the caregivers stopped EBF at 4 months (39.6%). 35.4% of the caregivers stopped EBF at 2 months. Most of the mothers indicated that they left their babies with other family members or next-door neighbours so as to go to some places around and look for casual jobs, thus they failed to continue with breastfeeding. In this case, a significant proportion of these children missed out on the benefits of continued breastfeeding as stated and at the recommended period of 2 years, (UNICEF, 2016).

The major reasons mentioned by the mothers of children under the age of two are that the breastmilk might not satisfy the baby and that the baby might die if breastmilk is the only food given to infants. Other caregivers mentioned that the child feels thirsty, water and some other traditional juices should be introduced. However, these reasons are also similar to those presented in the research study done by Victor et al, (2016) on knowledge, attitudes and determinants of EBF. Some of the caregivers had perceptions that babies get addicted only to breastmilk and refuse on any type of food even if they reach six months of age, thus they had to introduce complementary feeding earlier before six months so that the child gets used to complimentary foods. Some reported

that if they continue breastfeeding, they will have breast pains. There are some mothers (28) of the caregivers who reported that they could not continue with breastfeeding because they had a lot of work to do in the fields, thus they weaned earlier than six months.

WHO (2019) recommends continued breastfeeding up to 24 months and above. However, in Buhera district, the results showed that children between 6 to 11 months continued to be breastfed at the percentage rate of (80%). For children between 12 to 18 months the rate was (40%). 32.5% was for the children between 18 to 24 months. These results are almost the same as that of Lauer (2004) in his research on breastfeeding patterns and exposure to suboptimal breastfeeding among children in developing countries.

In this study, all the children above six months were introduced to complementary foods, some were even introduced to complementary foods before they reached six months. Less than a third (22.9%) of the caregivers introduced complementary foods at six months. Majority of the caregivers introduced at 4 months (52.1%), while 25% of the caregivers introduced complementary foods at 2 months.

Some of the reasons given by the caregivers on early introduction of complementary foods to the children below six months included that they did not perceive or believe that breastmilk alone would sustain the child up to six months. These caregivers were mostly less than 20 years of age, and indicated that they normally practice what they were taught by their elders (their mothers, grandmothers and their in-laws) and it was not easy for them just to take advices from the health professionals and that they did not trust these health professionals as they changed work stations time and again. The

mothers also indicated that as the child grew the milk production decreased, hence they started giving their children porridge and homemade mahewu.

These findings are however similar to a study that was done in Kenya by Ochola (2008). He indicated that the reasons for introducing complimentary foods at an early stage are pressure from society and family to introduce complementary foods, some misconceptions on breastmilk alone being adequate for the baby up to the age of six months and practical perceptions on excessive demands during maternal time. The other factor influencing complementary feeding practices are workloads that the mothers have. This is however similar to the results of secondary data analysis of Demographic and Health Survey 2006–2007 by Senarath, et al., (2012), where it is indicated that the workload of the caregivers is a crucial factor affecting infant feeding practices.

According to Dewey 2001), complementary foods should have a variety of foods from different food groups so as to make sure that all the nutrient needs are met and special attention should be given to minerals like zinc, phosphorus, sodium, magnesium and calcium. In this research, all the children (100%) were given foods rich in carbohydrates (roots, tubers and grains), 60.2% consumed dairy products, 59.4% of children were given foods rich in vitamin A. The least group of foods that was introduced was fruits and vegetables (34.7%). The main staple food (sadza) was normally prepared for the children with goat's or cow's milk. Vegetables were limited as relish for children because they indicated that the children might get chocked when left to eat on their own as the mothers will be doing household chores. These findings are however contrary to and do not meet up with the recommended nutrient intakes of (Dewey, 2001).

The results shown in figure 4.6, indicates that 41.4% of children between 6 to 23 months consumed iron rich foods and iron fortified foods. 51.4% of children within 12 to 23 months consumed foods rich iron. 49.5% between 9 to 11 months and 60% of 6 to 8 months consumed iron. According to Josh et al., (2011) and Owino et al., (2008) the consumption of iron rich foods is low also in rural areas, there is also low consumption of animal source foods.

In Buhera district, the caregivers indicated that intake of iron was low because they did not have enough knowledge on cooking some local vegetable leaf like blackjack leaves and Mowa. They indicated that when they tried to cook them, children refused to eat due to the bitter taste that they give. The caregivers also indicated that some of the vegetables encouraged by health care professionals or nutritionists are considered as weeds and it's hard for them to consume those vegetables, as they grew up viewing them as weeds.

Livestock is regarded as a major source of wealth; hence they are only cooked on special occasions and special gatherings like independence celebrations or on any local special gatherings. These findings, however agreed with the findings of Gibbs et al., (2015) who reported that caregivers are taught on good feeding and caring practices for children, however it takes a longer period to shift from their old practices to adopting new practices.

There is a relationship between meal frequencies and the total energy requirement. According to WHO (2008a), the meal frequency for breastfed children between six to eight months is two times per day, for breastfed children between 9 to 23 months, 3 times per day, 4 times for non-breastfed children of 23 months. This is however in contrary to the findings of this study as more children were fed twice a day (33.3%)

and the least number of children fed on demand (6.3%). 29.2% are fed 3 times a day. The mothers indicated that they did not afford to increase the meal frequency due to food shortages.

The total energy requirements of an infant who is healthy and well breastfed, receiving complementary foods is 616kcal/day for 6 to 8months children, 686kcal/day for 9 to 11 months and for 12 to 23 months, its 894kcal/day Brown and Dewey.,(2002). The caregivers reported that from the age of 12 months, children are taught and left to feed on their own without being monitored by anyone as they will be doing household chores. Nearly 50% of the caregiver had the knowledge of complementary feeding. 16.7% of other mothers reported of initiating complementary feeding at 2 months. They attributed this to old practices that they are used to and family pressures to introduce complementary foods early.

4.3.2 Program implementer's knowledge, attitude and practices

The current operating organization (Takunda Program) staff Nutritionist indicated that the goal for Takuda was to reduce malnutrition cases at least by 80% and promoting food security in the area. The nutrition intervention activities that the current program is implementing are EBF, Complementary feeding, WASH activities, Dietary diversity, meal frequency, Village Servings and Landing, and gender trainings. The nutritionist of the current operating program indicated that these nutrition intervention activities were repeatedly done in the same area over years but there was evident lack of adoption and sustenance of these nutrition activities. As an organization, they indicated that there is lack of cooperation with the beneficiaries. The beneficiaries did not attend health and nutrition trainings, they only came for collection of food rations.

This was indicated as the major problem because even if the beneficiaries collected the food rations, they lacked the good feeding practices trainings.

The other major challenges or barriers reported are that the people are clinging on to and are not doing away with their old habits. The caregivers', especially the teenage-aged caregivers' could not make decisions at a homestead where they are, with their in-laws and could not go against the wish of her husbands, as this is regarded as a cultural offense. An example in Chabata area ward 29, a pregnant woman or a child under the age of two years is not allowed to eat eggs and animal source products are limited, husbands are given large chunks of meat and children are maybe given gravy.

The afore-mentioned findings are similar to those of Joel and Amy, (2013) who indicated that Child care patterns in different cultural settings serves in enhancing or limiting the consumption of proteins from animal source foods. The other challenge that was brought out by the nutritionist was that the beneficiaries did not come for health and nutrition trainings due to long distances they walk, hence there was need to improve on intervention coverage and more village workers. This is in agreement to the study of Food and Nutrition Survey of 2001 and 2003 that were conducted by FNRI, (2004).

The district nutritionist recommended and encouragement on health and nutrition behaviours through conducting home visits. Trainings or educational materials should be brought out in local languages. The district nutritionist mentioned that malnutrition cases in Buhera district fluctuated due to lack of and sustenance of the health and nutrition behaviours that are brought by different organizations. The lack of adoption and sustenance of these nutrition intervention activities are due to cultural, religion,

poverty, patriarchal society, social norms and lack of knowledge on the use of local resources.

4.3.3 Religious influence on good feeding practices

The religious factors mainly affect the adoption of the nutrition messages that are promoted. More than half (52%) of the caregivers were members of the apostolic church sects that does not allow them to go clinics or for growth monitoring. This is however a great disadvantage to them since some health and nutrition messages are delivered at clinics.

On the other hand, there is a study conducted by Malik, Khalil, & Siddiqui (2018) that examined the influence of religion on the feeding practices of infants in a Muslim community in India. The researchers found that religious beliefs played a significant role in the decision-making process for infant feeding. Specifically, mothers who were more religious tended to breastfeed for longer periods, delay the introduction of solid foods, and avoid feeding certain types of food that were considered culturally inappropriate. The study suggests that religious beliefs can have a significant impact on the feeding practices of children under the age of two, particularly in communities where religion and culture are closely intertwined.

Most of the caregivers washed hands after using the toilet (27.1%). 25% of the caregivers wash their hands at five critical handwashing times. Poor feeding practices were noted as only 2.1% of the caregivers washed their hands before feeding the baby. These results are similar to those in ZimVAC (2016) on frequency of handwashing at critical times, the results showed that most of the people washed their hands after using the toilet.

The results showed that there is a small positive relationship between the variables of drinking water sources and water treatment, boiling (r=0.178, p=0.227, n=48). These resulted in diarrheal illnesses in the area. (72.5%) of the caregiver reported on diarrheal illnesses of their children within the previous six months. Only 38% of the caregivers used a long-handled cup to draw water from clean, safe and closed containers. Amongst all the targeted beneficiaries only (32%) had improved sanitation facilities, Blair Ventilated Improved Pit-latrine (BVIP).

In concussion, lack of education, reliance to old habits, lack of proper nutrition education, cultural, social, religion, economic, family and society pressures, are influencing the lack of adoption and sustenance of health and nutrition interventions. The knowledge that the caregivers have on good feeding practices is what they put into practice.

4.3.4 Natural disasters and Health and Nutrition behaviours

COVID -19 pandemic

The COVID-19 pandemic has had a significant impact on the health and nutrition of children under the age of five in Buhera district. The pandemic has disrupted health systems, supply chains, and created economic instability, resulting in increased number of undernutrition cases among children.

Results from the focus group discussions have stated that, one of the most significant effects of COVID-19 on the health and nutrition of children under five is food insecurity. The pandemic has disrupted food production, supply chains, and markets, which has led to increased food prices, reduced access to food, and overall food insecurity. Children under five who were already undernourished or vulnerable to

undernutrition were particularly affected. Moreover, with schools closed or disrupted, many children lost access to school feeding programs, which provided them with a reliable source of nutrition.

Additionally, the pandemic has led to reduced access to essential health services, including immunizations and routine check-ups, which has further worsened the health of children. This disruption to health services has left many children without access to life-saving vaccines, treatment for illnesses, and preventative healthcare services. Another indirect effect of COVID-19 on the health of children under five in Buhera district was the increased burden on caregivers. With lockdowns and movement restrictions, caregivers struggled to access health facilities or buy essential medicines, leading to a delay in seeking medical attention for their children. Also, the closure of schools has led to an increased burden on caregivers, especially mothers, who may have to choose between providing for their children or working to earn an income.

In conclusion, the COVID-19 pandemic has significantly affected the health and nutrition of children under the age of five worldwide. Addressing the challenges of food insecurity, disrupted healthcare, and the burden on caregivers is essential to mitigate the adverse effects of the pandemic on children's health and well-being. These results sync in with a study that was done in Nigeria by Usman et al. (2021)

A study conducted by Usman et al. (2021) found that the COVID-19 pandemic had a significant impact on the health and nutrition of children under the age of five. This study, was conducted in Nigeria, and it was found out that children's access to nutritious food and healthcare was severely limited during the pandemic, resulting in a higher prevalence of malnutrition and stunted growth among this age group.

Additionally, the study found that the pandemic disrupted routine immunization services, leading to a decrease in vaccination coverage and increasing the risk of outbreaks of vaccine-preventable diseases. The authors recommend urgent measures to mitigate the impact of the pandemic on the health and well-being of young children.

Cyclone Idai

Cyclone Idai, a natural disaster that hit Mozambique in March 2019, and some other parts of Manicaland in Zimbabwe had a devastating impact on the health and nutrition of children under the age of five. The cyclone caused widespread flooding, destruction of homes, and loss of crops, which led to food insecurity, undernutrition, and outbreaks of waterborne diseases such as cholera.

In some parts of Buhera district, the results from focus group discussions highlighted that the cyclone disrupted the provision of essential health services, including routine immunizations, which increased the risk of disease outbreaks. Moreover, the lack of safe drinking water and sanitation facilities also contributed to the spread of waterborne diseases, especially in wards 5, 6, 30 and 31. In terms of nutrition, the cyclone caused significant damage to crops and food supplies, which led to food shortages and undernutrition among children in Buhera district. UNICEF estimates that around 433,000 children under the age of five were affected by acute malnutrition in the aftermath of Cyclone Idai.

Overall, Cyclone Idai had a severe impact on the health and nutrition of children under the age of five in some parts of Buhera, and the recovery efforts requires a sustained response from the international community to ensure the well-being of the affected population.

However, there have been several studies conducted on how Cyclone Idai affected the health and nutrition of children under the age of five. One study conducted by UNICEF found that the cyclone had a significant impact on child health and nutrition, with many children suffering from malnutrition and waterborne diseases in the aftermath of the disaster. The study also highlighted the importance of continued support for affected communities to ensure long-term recovery and improved health outcomes for children.

Another study conducted by Save the Children found that Cyclone Idai led to an increase in cases of malnutrition among children under the age of five in Mozambique. The study recommended the provision of nutritional support and services to ensure that affected children received adequate nutrition to prevent long-term health consequences.

Overall, these studies demonstrate the significant impact that Cyclone Idai had on child health and nutrition, highlighting the need for continued support and interventions to ensure the well-being of affected children.

4.4 Summary

In summary, the major factors influencing the adoption and sustenance of health and nutrition behaviours are cultural beliefs and practices and individual perceptions and attitudes. Individual beliefs, attitudes, and perceptions toward health and nutrition influence behavior change. Positive attitudes towards healthy behaviors, self-efficacy, and motivation can facilitate adoption and sustenance of these behaviors. Conversely, negative attitudes, lack of confidence, or perceived barriers may inhibit behavior change efforts. Cultural norms and traditions influence food choices, feeding practices, and health-seeking behaviors within communities. Caregivers may adhere to cultural beliefs regarding food taboos, breastfeeding practices, or traditional remedies, which

can either facilitate or hinder the adoption of recommended health behaviors. Understanding and respecting cultural practices is essential for promoting culturally appropriate interventions.

CHAPTER 5 SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This chapter discusses conclusions drawn from the findings of the study, implications, recommendations, and suggestions for further research.

5.2 Discussion

The study aimed to investigate the adoption and sustenance of health and nutrition behaviours among caregivers of children under the age of five in Buhera District in Zimbabwe. The researchers used a cross-sectional study design and collected data from caregivers of children under the age of five. The study used a qualitative and quantitative data collection approaches to explore the impact of the project on the health and nutrition behaviours of households in the Buhera District as well as caregivers' practices on infant and young child feeding.

Quantitative data was obtained from a sample of 285 households, while the qualitative data was collected through focus group discussions and key informant interviews. Takunda Project, implemented by CARE International, is the current operating organisation that is aimed to reduce under-nutrition in the Buhera District of Zimbabwe through the implementation of some health and nutrition behaviours. The research topic focuses on the adoption and sustenance of these health and nutrition behaviours among caregivers of children under the age of five years.

5.2.1 Caregiver's knowledge, attitude and practices

The study found that the majority of the caregivers were aware of the recommended health and nutrition behaviours for children, such as exclusive breastfeeding, appropriate complementary feeding, and immunization. However, the adoption and

sustenance of these behaviours were low. The lack of knowledge (due to low levels of education) to prepare and store nutritious foods, lack or shortage of resources, and lack of social support were significant barriers to adopting and sustaining health and nutrition behaviours among caregivers of children under the age of five in Buhera District. In particular, the study found that caregivers lacked knowledge of optimal infant and young child feeding practices and often faced resource constraints, including limited access to food and healthcare services.

The study was also able to unearth social and cultural factors, such as traditional beliefs and gender norms, as contributing to the lack of adoption and sustenance of health and nutrition behaviours. The study also found that the adoption and sustenance of health and nutrition behaviours were associated with improved child health and nutrition outcomes. Caregivers who adopted and sustained these behaviours had children with better nutritional status, lower rates of illness, and higher rates of immunization. Overall, the study highlights the need for targeted interventions to address the barriers to adopting and sustaining health and nutrition behaviours among caregivers of children under the age of five in Buhera District, Zimbabwe. These interventions should prioritize improving access to knowledge, resources, and social support to enable caregivers to provide optimal care for their children.

5.2.2 Knowledge , attitude and practices fo program implenters

The findings of the study also showed that the Takunda Project was effective in promoting and sustaining health and nutrition behaviours among households in the Buhera District. The project successfully increased the consumption of nutrient-rich foods, such as fruits and vegetables, and reduced the intake of energy-dense, nutrient-

poor foods. It also promoted breastfeeding and increased the knowledge of caregivers on the importance of exclusive breastfeeding for infants.

5.2.3 Factors contributing to the of adoption and sustenance of health and nutrition behaviours

The study also identified several factors that contributed to the success of the project, including community engagement and participation, the use of innovative and culturally appropriate communication strategies, and the involvement of traditional leaders in promoting health and nutrition behaviours.

The study concluded that there is a need for interventions that address the barriers to the adoption and sustenance of health and nutrition behaviours among caregivers of children under the age of five in Buhera District. These interventions should focus on improving knowledge, skills, and access to health services, as well as addressing cultural beliefs and practices that may hinder the adoption of recommended behaviours.

5.3 Conclusion

In conclusion, the adoption and sustenance of health and nutrition behaviours are critical in reducing undernutrition of children under the age of five in Buhera District, Zimbabwe. The lack of adoption and sustenance of these behaviours can contribute to the problem of undernutrition. However, by increasing awareness, promoting behaviour change, improving access to health and nutrition services, empowering women, strengthening health systems, and collaborating with stakeholders, it is possible to improve the health and nutrition of children in the district. It is essential to prioritize these interventions and work together to ensure the most vulnerable children

are reached. With concerted efforts, it is possible to address the issue of undernutrition and ensure that children in Buhera District thrive and reach their full potential.

5.4 Implications

- **Food Insecurity and Poverty:** Buhera District, like many rural areas in Zimbabwe, faces challenges related to food insecurity and poverty. Limited access to nutritious foods due to poverty and erratic weather patterns can lead to inadequate dietary intake among children, exacerbating undernutrition.
- **Limited Healthcare Infrastructure:** The district may have inadequate healthcare infrastructure, including health facilities, trained healthcare workers, and medical supplies. This can hinder access to essential healthcare services, including antenatal care, postnatal care, and nutritional counseling for caregivers.
- **Lack of Clean Water and Sanitation:** Poor access to clean water and sanitation facilities increases the risk of waterborne diseases and infections, which can contribute to undernutrition among children. Lack of hygiene practices, such as handwashing, further exacerbates the problem.
- **Cultural Beliefs and Practices:** Cultural beliefs and practices surrounding infant feeding, dietary preferences, and healthcare-seeking behaviors may impact the adoption of recommended health and nutrition behaviors. For example, traditional beliefs about early introduction of solid foods or herbal remedies for childhood illnesses may conflict with evidence-based recommendations.
- **Limited Education and Awareness:** Low levels of education and awareness among caregivers about optimal health and nutrition practices can hinder the

adoption of recommended behaviors. Caregivers may lack knowledge about exclusive breastfeeding, appropriate complementary feeding, micronutrient supplementation, and hygiene practices.

- **Inadequate Access to Nutritious Foods:** Limited availability and affordability of nutritious foods, such as fruits, vegetables, and animal-source foods, may contribute to poor dietary diversity and micronutrient deficiencies among children. Market access challenges and high food prices further exacerbate the problem.
- **Weak Health Systems:** Weak health systems, including challenges in healthcare delivery, supply chain management, and health information systems, may hamper efforts to deliver essential healthcare services and interventions targeting child nutrition.
- **Gender Inequality:** Gender disparities in access to resources, decision-making power, and caregiving responsibilities can impact child nutrition outcomes. Women may face barriers in accessing healthcare services, education, and employment opportunities, which can affect their ability to provide adequate care for their children.
- **Environmental Factors:** Environmental factors such as droughts, floods, and natural disasters can disrupt agricultural production, food supply chains, and livelihoods, exacerbating food insecurity and malnutrition in the community.
- **Limited Resources and Funding:** Insufficient resources and funding allocated to nutrition programs and interventions may constrain the implementation of effective strategies to address child undernutrition in Buhera District.

Addressing these challenges requires a comprehensive and multi-sectoral approach involving government agencies, non-governmental organizations, community-based organizations, healthcare providers, educators, and other stakeholders. Strategies should focus on improving access to nutritious foods, enhancing healthcare services and infrastructure, promoting education and awareness, addressing cultural barriers, strengthening health systems, and addressing underlying determinants of undernutrition, such as poverty and gender inequality. Additionally, community engagement, capacity building, advocacy, and policy support are essential for sustainable improvements in child nutrition outcomes in Buhera District, Zimbabwe.

5.5 Recommendations

1. **Strengthen community engagement**: Community engagement is a critical factor in promoting the adoption and sustenance of health and nutrition behaviours. CARE International and other future programs should continue to engage communities in the design and implementation of interventions, to ensure that they are culturally appropriate and responsive to local needs.
2. **Provide sustained support**: The study highlights the importance of sustained support in promoting the adoption and sustenance of health and nutrition behaviours. Future programs on health and nutrition should consider strategies to provide ongoing support to caregivers and communities beyond the project period to ensure that behaviours are sustained over time.
3. **Improve access to health services**: The study also highlights the importance of access to health services in promoting health and nutrition behaviours. CARE International and other future programs should continue to work with

health service providers to improve access to and quality of health services, particularly for women and children.

4. **Address underlying determinants:** The study highlights the importance of addressing underlying determinants of undernutrition, such as poverty and inadequate access to resources. Organisations dealing with health and nutrition should work with communities and other stakeholders to address these underlying determinants to support the sustained adoption of health and nutrition behaviours.
5. **Use a multi-sectoral approach**: The study highlights the complex and multi-faceted nature of undernutrition. Organisations dealing with health and nutrition should continue to use a multi-sectoral approach that engages multiple sectors, including health, agriculture, and water and sanitation, to address the underlying causes of undernutrition.
6. **Build on successful strategies**: The study identifies successful strategies for promoting the adoption and sustenance of health and nutrition behaviours, such as peer support groups and behaviour change communication. Health and nutrition programs should build on these successful strategies in future programming.
7. **Increase awareness**: Health and nutrition programs should conduct community-based education campaigns to increase awareness of the importance of health and nutrition behaviours. This can be done through radio programs, community meetings, and outreach programs.
8. **Improve access to health and nutrition services**: Health and nutrition programs should ensure that health and nutrition services are accessible to all,

including those in hard-to-reach areas. This can be achieved by increasing the number of health facilities, community health workers, and outreach programs.

9. **Empower women**: Women play a crucial role in ensuring the health and nutrition of their children. Empowering women can be achieved by providing them with education, training, and support. This can include programs that promote women's economic empowerment, access to education, and the involvement of women in decision-making processes.
10. **Strengthen health systems**: Strengthening the health system is essential to ensure that health and nutrition services are delivered effectively. This can be achieved through the recruitment and training of health workers, improving the availability of essential medicines and supplies, and strengthening health information systems. This should be addressed to policy makers.

Overall, these recommendations can help to inform the design and implementation of future interventions aimed at reducing undernutrition in Buhera District and other similar contexts.

5.6 Suggestions for Further Research

Further suggestions should focus on evaluation of Healthcare Services and Infrastructure. There is need to evaluate the availability, accessibility, and quality of healthcare services, including maternal and child health services, nutrition counseling, and growth monitoring, in Buhera District. Assess healthcare infrastructure, human resources, service delivery models, and challenges in healthcare provision to inform strategies for strengthening health systems.

There is also a need to assess the impact of Community-Based Interventions. This requires the assessment of the effectiveness of community-based interventions aimed at promoting health and nutrition behaviors among caregivers of young children in Buhera District. Evaluate the impact of interventions such as community health worker programs, mother support groups, nutrition education sessions, and behavior change communication campaigns on caregiver practices and child nutrition outcomes.

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APPENDICES

Appendix 1: Nutrition Intervention Questionnaire

Questionnaire number -

Section A: District Nutritionist

#	Question	Response
1	How many Nutrition Interventions have been brought in Buhera for the past 15 years?	…… ……
2	Tick the relevant activities or messages of these Nutrition Interventions?	☐ Exclusive breastfeeding ☐ Complementary feeding ☐ Handwashing ☐ Dietary diversity ☐ Meal Frequency ☐ Other ***(Please Specify)*** …… …… ……
3	Where these interventions of positive impact to Buhera District?	☐ Yes ☐ No
	If **Yes** provide the statistics over the previous 5 – 15 years	…… ……
4	Tick the major challenges to the success or failure of these interventions	☐ Culture ☐ Religion ☐ Poverty ☐ Patriarchy ☐ COVID-19 ☐ Cyclone Idai ☐ Other ***(Please Specify)*** …… …… ……
5	What are your recommendations to the future nutrition interventions?	☐ Effective communication ☐ Nutrition education ☐ Nutritional Gardens ☐ Growth Monitoring Promotions ☐ Other ***(Please Specify)*** …… …… ……

Current Operating Nutrition Intervention Program (Takunda)

Questionnaire number -

#	Question	Response
1	How long is the TAKUNDA program?	…… ……
2	What are your major goals or target as an organization?	…… ……
3	What are health and nutrition interventions being done by TAKUNDA in improving the nutritional status of under five children in Buhera?	☐ Exclusive breastfeeding ☐ Complementary feeding ☐ Handwashing ☐ Dietary diversity ☐ Meal Frequency ☐ Other ***(Please Specify)*** …… …… ……
4	Are there any nutrition intervention activities that you are implementing, and they have been implemented before by your organization or other organizations?	☐ Yes ☐ No ☐ Comment …… …… ……
5	What is your target as an organization in eradicating malnutrition?	☐ 25 % ☐ 80 % ☐ 100 %
6	Are there any improvements that you are noticing since you started operating in this area?	…… ……
7	What are the challenges that you are encountering as an organization in the implementation of your activities?	…… ……
8	What are your recommendations for the other upcoming interventions?	…… ……

Section A: Demographics

Caregivers of Children under the age of five

#	Question	Response
1	Child's Name	…… ……

	Age	…… ……
	Gender	☐ Male ☐ Female
2	Marital status of the caregiver	☐ Single ☐ Married ☐ Divorced
3	What is your level of education?	☐ Primary Education ☐ Secondary Education ☐ Tertiary Education
4	Do you go to work?	☐ Yes ☐ No
	If ***Yes***, what is your occupation?	…… ……
5	How many children do you have?	…… ……
6	Are you on a polygamous type of marriage?	☐ Yes ☐ No
7	What is your religion	…… ……

Section B: Nutrition Intervention Information

#	**Question**	**Response**
1	Is there any nutrition intervention program that is currently operating in your area?	☐ Yes ☐ No
	If yes, what's the intervention?	…… ……
2	What is being done by these nutrition intervention programs? *(Activities that are being implemented)*	…… ……
3	How are these nutrition interventions (intervention mentioned above) being delivered to you in this area?	☐ Health Promotions ☐ Cooking demonstrations ☐ Awareness Campaigns ☐ Home visits ☐ Trainings ☐ Other ***(Please Specify)*** …… …… ……
4	What do you think or how do you see these nutrition interventions? Are they of beneficial to you?	…… ……

5	Which of the nutrition intervention activities have you implemented as an individual? What are the challenges that you are facing in the implementation of the health behaviours that you are being taught?	☐ Complementary feeding ☐ Handwashing ☐ Dietary diversity ☐ Meal Frequency ☐ Iron rich foods ☐ Comment …… …… ……
6	Where does these nutrition interventions need to improve?	☐ More gardens ☐ Selection Criteria ☐ Improve the coverage ☐ More boreholes ☐ More/ accessible FDPs ☐ More CGLs ☐ Irrigation Schemes ☐ Other ***(Please Specify)*** …… …… ……

Section C: Feeding Practices

Breastfeeding

#	Question	Response
1	Do you breastfeed your baby? *(Please tick the appropriate answer)*	☐ Yes ☐ No
2	When did you start breastfeeding your child? *(Please tick the appropriate answer)*	☐ Within the first hour ☐ Within the first day ☐ After one hour ☐ Never
3	Did you get assistance on breastfeeding from a health practitioner?	☐ Yes ☐ No Comment …… …… ……
4	How long have you been breastfeeding your baby without giving any other type of food?	☐ 2 months ☐ 4 months ☐ 6 months ☐ 8 months ☐ 12 months

		☐ 18 months ☐ 24 months
5	Is it of importance exclusively breastfeeding your child?	☐ Yes ☐ No Comment …… …… ……
6	How long should Exclusively Breast feeding be done?	☐ 2 months ☐ 4 months ☐ 6 months ☐ 8 months

Complimentary Feeding

#	Question			Response
1	When did you start introducing other foods other than breastmilk to your child?			☐ 2 months ☐ 4 months ☐ 6 months ☐ 8 months Comment …… …… ……
2	How often do you feed your baby per day?			☐ On demand ☐ 4-6 times ☐ 3 times ☐ 2 times ☐ Once Comment …… …… ……
3	Do you give your baby any type of the listed groups of foods below? How many times per?			
	Food Group	**Yes / No**	**Number of times per day**	**Comment**
	Legumes and nuts			
	Dairy products			
	Meat (beef, chicken, goat), insects			

	Vitamin A rich foods (Pumpkins, carrots, tomatoes)			
	Fruits and vegetables			
	Iron rich foods			
	Eggs			
4	Tick other indigenous fruits and vegetables that are locally available			☐ Matamba ☐ Tsubvu ☐ Masau ☐ Nyii ☐ Mazhanje ☐ Nyevhe ☐ Mowa ☐ Nhungumira ☐ Muboora ☐ Derere ☐ Other *(Please Specify)* …… …… ……

Section D: Caring Practices

#	Question	Response
1	Is it important to wash hands?	☐ Yes ☐ No
2	Tick your critical handwashing times	☐ Before eating ☐ Before feeding the baby ☐ After using the toilet ☐ Before preparation and or handling food ☐ After removing the baby's nap
3	List your sources of drinking water?	…… …… ……
4	How do you store your drinking water?	☐ 20 litre open buckets ☐ 20 litre covered buckets ☐ Clay pots ☐ 5 litre bottle Other *(Please Specify)* ……

		…… ……
5	Do you boil your drinking water?	☐ Yes ☐ No
6	Have your child suffered from any diarrheal illness?	☐ Yes ☐ No
7	If yes how did treat the disease?	☐ Health Facility and ORT ☐ ORT only ☐ Traditional healer ☐ Prophet ☐ Health Facility only ☐ Herbalist Comment …… …… ……

Section E: Growth Monitoring

#	**Question**	**Response**
1	Do you take your baby for monthly growth monitoring?	☐ Yes ☐ No
	If **No**, why?	Comment …… …… ……

Appendix 2: Consent Form

TITLE OF THE STUDY: Adoption and sustenance of Health and Nutrition behaviours in reducing undernutrition of children under the age of five in Buhera District, Takunda Project (Care International).

Hello. I am Lisa Ghenti, a final-year student at Africa University. I am studying Masters in Public Health. I am carrying out a study on the Adoption and sustenance of Health and Nutrition behaviour change in reducing undernutrition, Buhera,. I'm kindly asking you to answer the following questions. The questionnaire will take less than 20 minutes of your time.

Confidentiality

The information that you are going to give me is strictly confidential and will only be used for academic purposes.

Thank you very much for your cooperation.

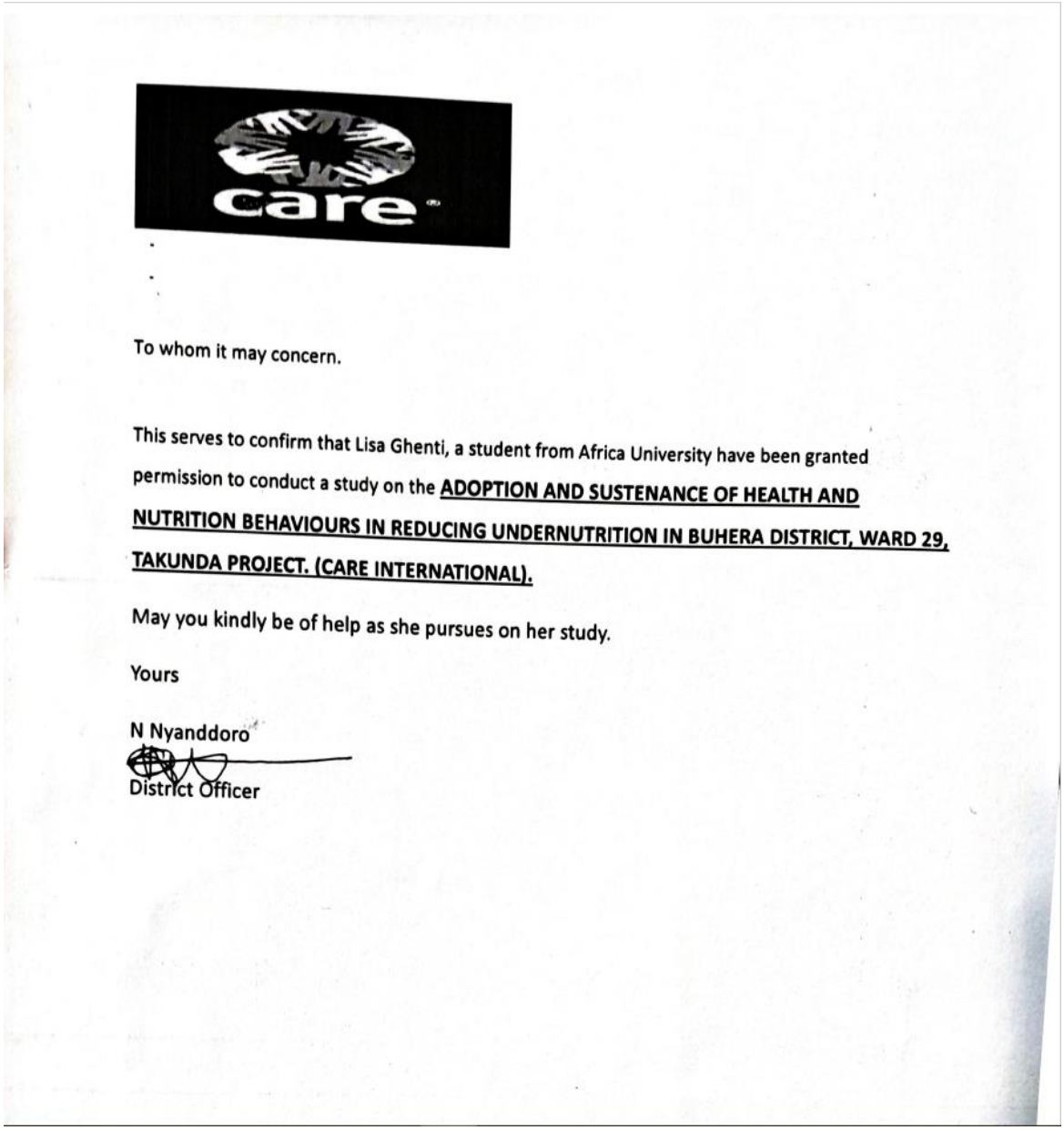
Ward Number. .....

Village Name. .....

Health Facility .....

Questionnaire Number. .....

Appendix 3: Manicaland PMD/DMO Approval



To whom it may concern.

This serves to confirm that Lisa Ghenti, a student from Africa University have been granted permission to conduct a study on the **ADOPTION AND SUSTENANCE OF HEALTH AND NUTRITION BEHAVIOURS IN REDUCING UNDERNUTRITION IN BUHERA DISTRICT, WARD 29, TAKUNDA PROJECT. (CARE INTERNATIONAL).**

May you kindly be of help as she pursues on her study.

Yours

N Nyanddoro

District Officer

Appendix 4: AUREC Approval Letter

Investing in Africa's future

AFRICA UNIVERSITY RESEARCH ETHICS COMMITTEE (AUREC)

P.O. Box 1320 Mutare, Zimbabwe, Off Nyanga Road, Old Mutare-Tel (+263-20) 60075/60026/61611 Fax: (+263 20) 61785 website: www.africau.edu

Ref: AU2717/23 24 March, 2023

LISA GHENTI
C/O Africa University
Box 1320
MUTARE

RE: **ADOPTION AND SUSTENANCE OF HEALTH AND NUTRITION BEHAVIOURS IN REDUCING UNDERNUTRITION IN BUHERA DISTRICT, TAKUNDA PROJECT. (CARE INTERNATIONAL)**

Thank you for the above-titled proposal that you submitted to the Africa University Research Ethics Committee for review. Please be advised that AUREC has reviewed and approved your application to conduct the above research.

The approval is based on the following.

a) Research proposal

- **APPROVAL NUMBER** AUREC 2717/23
  This number should be used on all correspondences, consent forms, and appropriate documents.
- **AUREC MEETING DATE** NA
- **APPROVAL DATE** March 24, 2023
- **EXPIRATION DATE** March 24, 2024
- **TYPE OF MEETING** Expedited
  After the expiration date, this research may only continue upon renewal. For purposes of renewal, a progress report on a standard AUREC form should be submitted a month before the expiration date.
- **SERIOUS ADVERSE EVENTS** All serious problems having to do with subject safety must be reported to AUREC within 3 working days on standard AUREC form.
- **MODIFICATIONS** Prior AUREC approval is required before implementing any changes in the proposal (including changes in the consent documents)
- **TERMINATION OF STUDY** Upon termination of the study a report has to be submitted to AUREC.

AFRICA UNIVERSITY
RESEARCH ETHICS COMMITTEE (AUREC)
APPROVED
P.O. BOX 1320, MUTARE, ZIMBABWE

Yours Faithfully

MARY CHINZOU
ASSISTANT RESEARCH OFFICER: FOR CHAIRPERSON
AFRICA UNIVERSITY RESEARCH ETHICS COMMITTEE