

DEVELOPMENT OF STRATEGIES TO ENHANCE HEALTH-SEEKING BEHAVIOUR  
OF PARENTS AND CAREGIVERS WITH CHILDREN UNDER-FIVE YEARS WITH  
ACUTE DIARRHOEA IN THE OHANGWENA REGION, NAMIBIA

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## **ABSTRACT**

The study aimed to develop strategies for healthcare professionals and healthcare extension workers (HEWs) to enhance appropriate health-seeking behaviours of parents/caregivers of children under five with diarrhoea in the Ohangwena Region in Namibia.

In Namibia, the prevalence of diarrhoea nationally is 17%, responsible for 5% of all deaths in children under five, and is the second leading cause of death. Mortality due to diarrhoea is preventable when appropriate and prompt healthcare is sought on time. However, in Namibia, few studies have been conducted to assess the magnitude and factors associated with health-seeking behaviour. The researcher conducted a study with a convergent parallel mixed-method design between January and March 2019 in Engela District, Ohangwena Region, Namibia. The study comprised four phases.

**Phase 1:** During this phase, the researcher conducted concept analysis. For quantitative data, the researcher used the multistage cluster sampling method. The researchers purposively included only households with children under five, and a total of 530 houses were selected. Structured questionnaires were used to collect quantitative data. The International Business Machines (IBM) Statistical Package for Social Science (SPSS) software version 25 was used to analyse quantitative data. For qualitative data, the researcher purposively selected three doctors, ten nurses, four priests and five traditional healers for key informant interviews.

Additionally, the researcher conducted nine focus group discussions (FGD) with 57 HEWs and six FGD with 30 parents/caregivers, and all participants were purposively sampled. All interviews were audiotaped and transcribed verbatim, and Atlas ti was used to analyze qualitative data.

The overall prevalence of diarrhoea among children under five was high—23.8%, with informal settlements having the highest prevalence of 48%. Equally, we found evidence showing that 77% of children suffering from diarrhoea had severe malnutrition. Some mothers or caregivers perceived diarrhoea as being associated with spiritual beliefs, traditional beliefs, and myths. Furthermore, most mothers/caregivers (64%) were categorized as having inadequate knowledge of the aetiology, prevention, and

management of diarrhoea, 84% had poor practices, and 61% admitted to having practised perineal cutting as part of the management of acute diarrhoea. However, the existing guidelines do not reflect aspects aiming to improve parents' and caregivers' current practices and health-seeking behaviours.

**Phase 2:** Involved conceptualizing the study's key findings on health-seeking behaviour and linking them to the Dickoff, James, and Wiedenbach's (1968) practice-oriented theory for development of strategies.

**Phase 3:** Was informed by the factors identified in Phases 1 & 2; Phase 3 outlines the procedures followed in developing the strategies. Furthermore, the strategies in the current study were developed using Howe's Compass Aligned Performance System (c@ps), created in 2011. The strategies were constructed upon the conceptual framework by using the Delphi process.

**Phase 4:** A team of experts verified the strategies after development. Furthermore, based on the study findings, recommendations were made

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Date: October 2022

## **DEDICATION**

I dedicate this thesis to my late parents, Albertina Nangula Akweenda, and Roberto Bauleth D’Almeida, for their love and blessings. May their souls rest in eternal Peace.

My dedication is extended to my most tremendous cheer influential, my daughters Desired-Kelly Martha and Mary-J Ndikuhole Mariquita, and my exquisite son Lawson-Papito Natangwe. Your unconditional support, love, and belief in my academic pursuits gave me the strength and courage not to give up.

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For all those who directly or indirectly contributed to the development of this work but whose names are not mentioned here, be assured of my sincere thanks.

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## LIST OF ABBREVIATIONS

ABBREVIATIONS	INTERPRETATION
c@ps	Compass Aligned Performance System
CDD	Control of Diarrhoeal Diseases
DHS	Demographic and Health Surveys
FGD	Focus Group Discussions
HEW	Health Extension Workers
HH	Household
HP	Health Promotion
HSB	Health-Seeking Behaviour
IBM	International Business Machines
IMCI	Integrated Management of Child Illnesses Programme
KAP	Knowledge Attitudes and Practices
MDG4	Millenium Development Goal 4
MoHSS	Ministry of Health and Social Services
NDHS	Namibian National Demographic and Health Survey
NVM	Networks View Manager
ORS	Oral Rehydration Salts
ORT	Oral Rehydration Therapy
PHC	Primary Health Care
SAM	Severe Malnutrition
SDG	Sustainable Development Goals
SPSS	Statistical Package for Social Science software
UN	United Nations
UNAM	University of Namibia
UNICEF,	United Nations Children's Fund
WHO	World Health Organization

# CHAPTER 1

## INTRODUCTION AND BACKGROUND OF THE STUDY

### 1.1 INTRODUCTION

According to the World Health Organization (WHO), the United Nations Children's Fund (UNICEF), World Bank, and United Nations (UN),<sup>(1)</sup> millions of children under five years of age globally die every year from preventable diseases such as pneumonia, diarrhoea, and malaria.<sup>(1)(2)</sup> Diarrhoeal disease is ranked as the second most common cause of death among children under five, leading to an estimated 1.87 million deaths globally.<sup>(3)</sup> In 2015, more than half a million children under five were estimated to have died from diarrhoeal disease.<sup>(4)</sup> Furthermore, diarrhoea remains a public health problem in developing countries, accountable for more than 760,000 deaths of children under five every year in both low and middle-income countries.<sup>(5,6)</sup> Most of these deaths occur in Africa and South Asia, and nearly half of those deaths occur in Africa.<sup>(3,7)</sup> Even though, over the past 25 years, mortality from diarrhoea in under-fives has declined globally, in sub-Saharan Africa, morbidity from the diarrhoeal disease remains high due to inadequate water supplies, poor water supplies, and poor sanitation/hygiene, insufficient breastfeeding, and malnutrition.<sup>(8)</sup> Increased internal migration to African cities results in overcrowding and is often associated with diarrhoea outbreaks among the under-fives. Children under five are the most vulnerable to diarrhoeal disease, especially during the first two years of life.<sup>(9)</sup> Furthermore, the World Health Organization (WHO)<sup>(10)</sup> developed the integrated management of childhood illness (IMCI) strategy to reduce mortality and morbidity and to improve quality of care by improving the delivery of a variety of curative and preventive measures together with behavioral interventions at health facilities, at home, and in the community. Various countries implemented the strategy all over the world, including Namibia. However, according to a study carried out by Gera et al.,<sup>(11)</sup> aiming to evaluate the effects of program implementation in terms of death, nutritional status, quality of care, coverage with IMCI deliverables, and satisfaction of beneficiaries, it was concluded that implementing IMCI strategy may reduce child mortality, and packages that include

interventions for the neonatal period may reduce infant mortality. However, IMCI may have little or no effect on nutritional status and probably has little or no impact on vaccine coverage.

In Namibia, the under-five top five causes of mortality are diarrhoea, pneumonia, malnutrition, prematurity, and low birth weight. Diarrhoea is the leading cause of morbidity for children in the country.<sup>(12)</sup> Over the past few decades, several countries worldwide have made remarkable progress in improving child survival. However, preventable diseases such as pneumonia (16%), diarrhoea (8%), and malaria (5%) are still the leading causes of child death, representing nearly a third of deaths in under five, with sub-Saharan and Africa accounting for about 40% of such deaths.<sup>(1)</sup>

Infectious diseases remain highly prevalent in sub-Saharan Africa, and Southern Asia despite substantial advances in fighting childhood illnesses.<sup>(1)</sup> Dehydration is the most common cause of death in diarrhoeal disease, and such deaths can be prevented or treated. Treatment with oral rehydration salts (ORS) has been shown to be particularly useful in reducing deaths from this disease.<sup>(13)</sup> As discussed by Taffa and Chepngeno,<sup>(14)</sup> effective health-seeking has a great potential to reduce the occurrence of life-threatening effects of childhood illness. Therefore, understanding the key factors influencing this process is needed to improve mothers' and caretakers' health-seeking behaviour (HSB) for managing acute diarrhoea in children under five.

## 1.2 BACKGROUND OF THE STUDY

Despite the decrease in under-fives mortality and a reduction in childhood pneumonia and diarrhoea globally, these diseases are still the leading causes of under-five mortality and morbidity, accounting for about 2 million deaths yearly.<sup>(15)</sup> According to WHO<sup>(16)</sup> every year globally, nearly 1,7 billion cases of childhood diarrhoea are reported, and around 525,000 deaths are reported due to diarrhoea in children under five.

Diarrhoea poses a global public health concern and a significant economic threat in developing countries. Traditional beliefs often lead to identifying pathways that lead to

informal health care, usually beginning with home care, followed by traditional and spiritual healers, and extending to the formal system.<sup>(17)(18)</sup>

Worldwide, health promotion programmes have long been premised on the idea that providing knowledge about the causes of ill health and choices available will eventually promote change in individual behaviour towards more healthy health-seeking behaviour.<sup>(19)</sup> Nonetheless, there is a growing recognition in both developing and developed countries that providing education and knowledge at the individual level is insufficient to promote behaviour change.

Several descriptive studies on health-seeking behaviour highlighted the complexity of influences on an individual's behaviour at a given time and place. However, it has alluded that most studies focused almost exclusively on an individual as a purposive and decisive agent; therefore, there is a growing concern that factors promoting appropriate health-seeking behaviours are not solely entrenched in the individuals because individuals have a more dynamic, collective interactive elements.<sup>(17)</sup> Therefore, academics have started to explore how the local dynamics of communities influence the well-being of the inhabitants. In addition, the researcher conducted an extensive literature review of the situation in developing countries to relate the similar factors responsible for shaping up health-seeking behaviour among caregivers of children under five with diarrhoea and health service utilization in Namibia.

### **The study sites**

Ohangwena region is one of the thirteen areas in the northern part of Namibia, sharing borders with the Cunene province and the territory of Cuando Cubango province in the southern part of Angola.<sup>(20)</sup> The study site is approximately 740 kilometres from Windhoek, the capital city of Namibia. The region comprises eleven constituencies; seven of them (Ongenga, Endola, Ondobe, Oshikango, Omulondo, Engela, and Ohangwena) fall under Engela health district, where the current study took place (See Figure 1). Nevertheless, 62.3% of the Ohangwena Region population resides in the Engela District.<sup>(20)</sup> Most people (89.9%) live in rural areas, compared to 10.1% living in urban areas. The district's health services delivery is provided by one regional hospital, two health centres, and 18 clinics and outreach service posts. The predominant activities are small-scale agriculture and the keeping of cattle. However, this region is frequently



### 1.3 STATEMENT OF THE PROBLEM

The development of Health Promotion (HP) strategies to enhance appropriate health-seeking behaviour was necessitated by a study conducted by the researcher on treatment adherence.<sup>(20)</sup> The study found that some defaulters were convinced they were bewitched and could only treat their disease with traditional medicines. Patients often stopped their treatment and sought help from traditional healers and spiritual healers.<sup>(21)</sup> In Namibia, infant and child mortality is high, especially in the northern part of the country, with Ohangwena Region having the highest rate of 95/1000.<sup>(22)(23)</sup> According to the Namibian National Demographic and Health Survey (NDHS) of 2013, diarrhoea prevalence was 17%, and 64% of mothers or caregivers said they took their children to a facility or provider for advice and treatment<sup>(23)</sup>

Similarly, Ohangwena Health Directorate's Annual Report, 2016/2017 reported that 22,201 children under five were diagnosed with diarrhoea, of which 11,507 (52%) were from the Engela District<sup>(24)</sup> where the study was conducted. In the Ohangwena region, the diarrhoeal disease was estimated to affect 19% of children under five.<sup>(23)</sup> Furthermore, it is estimated that 62.3% of the Ohangwena region's population lives in the Engela district where the current study occurred. This massive population in the community resulted in the spread of informal settlements and a lack of essential services such as water provision, reliable waste removal, and toilet facilities. Such living conditions are reported to create a high risk for water-borne and gastrointestinal diseases, including diarrhoeal diseases.<sup>(8)</sup> Of course, diarrhoeal diseases are an important health problem to address if the Sustainable Development Goals (SDG) are to be achieved globally and, more specifically, SDGs 3 and 6, aim to end preventable mortality among children under five by the year 2030.<sup>(25)</sup> A significant cause of morbidity and mortality is dehydration due to severe diarrhoea. According to Donnell,<sup>(26)</sup> 60-70% of child deaths worldwide are due to deficiency in seeking healthcare and poor access to services.<sup>(27)</sup> In developing countries, many children die without ever reaching a healthcare facility due to delays in seeking care, even though health-seeking interventions can substantially reduce child mortality.<sup>(25)</sup> Not seeking care or a delay in seeking health care, together with ineffective treatment choices, can compromise a child's health status. Such a delay could affect a child's health and lead to complications that make medical care less effective or useless. Treatments for common

childhood illnesses like diarrhoea, malaria, and pneumonia are usually very effective if care is sought in time. Furthermore, the Namibian Ministry of Health and Social Services has come up with various strategies and programs to improve health of children under five years old such as: programs aiming to promote proper nutrition and adequate water supply, immunization against the major infectious diseases, basic housing sanitation and education, awareness and prevention and control of prevailing community health problems.<sup>(23)</sup> Furthermore, despite all the government's efforts child morbidity and mortality keeps raising. Available literature reflects that not many studies have been conducted in Namibia and the northern part of the country on mothers' and caretakers' health-seeking behaviour (HSB) for acute diarrhoea and come up with strategies aiming to address the problem.

However, the NDHS of 2013 indicated that socio-economic differences, demographic characteristics, and women's status in the community all influence childhood mortality.<sup>(23)</sup>

The situation mentioned above indicates the need to review the case in communities presenting with high incidences of child mortality to determine factors involved in HSB among caregivers of children under five. Understanding HSB will enable the researcher to understand health-seeking practices better and develop strategies to promote health-seeking behaviour in various contexts. Strategic planning is grounded on the belief that the successful development of strategies requires first determining the strengths, weaknesses, opportunities, and threats stemming from the environment.<sup>(1)</sup> The main hypothesis is that the strategies must be responsive to their environment, which is continuously changing, to be effective. Therefore, emphasis should be placed on understanding the changes and adopting the appropriate decisions. Furthermore, strategy formulation aims to provide a clear and focused road map comprising two major components: the strategy and the implementation.<sup>(28)</sup> Based on the current study, during the situational analysis phase, the researcher identified factors contributing to diarrhoea prevalence and those hindering appropriate health-seeking behaviour of mothers and caregivers. Therefore, one of the principal reasons for developing these strategies was to address the challenges identified in the study.

## 1.4 RESEARCH QUESTIONS

1. What are the epidemiology and factors associated with diarrhoea prevalence in the Ohangwena region?
2. What are the parents'/caregivers' views on the causes of diarrhoea prevalent in the Ohangwena Region?
3. What are parents'/caregivers' knowledge, attitudes, and practices related to the cause, prevention and management of diarrhoea?
4. What are the factors associated with health seeking in Ohangwena Region?

## 1.5 PURPOSE OF THE STUDY

The study aims to develop strategies to enhance the health-seeking behaviours of parents and caregivers with children under-five years with acute diarrhoea in the Ohangwena Region, Namibia

## 1.6 RESEARCH OBJECTIVES

The objectives of this study are to:

1. Conduct situational analysis [**Phase 1**]. Four sub-objectives are to:
  - a. Determine and describe the epidemiology and factors associated with diarrhoea among children under five in the Ohangwena region [**Phase 1**].
  - b. Explore and determine parents' or caregivers' views about the causes of diarrhoea prevalent in the study area of Engela District in the Ohangwena region [**Phase 1**].
  - c. Determine the knowledge, attitudes, and practices among parents or caregivers in Engela District in the Ohangwena region regarding acute diarrhoea [**Phase 1**].
  - d. Determine and explore factors associated with health-seeking behaviours of caregivers living in Engela District in the Ohangwena region [**Phase 1**].
2. Develop a conceptual framework for developing strategies for appropriate health-seeking behaviours in the Ohangwena region [**Phase 2**].
3. Develop strategies for HP and appropriate health-seeking behaviours [**Phase 3**].

4. Evaluation of the effectiveness of health promotion and appropriate health-seeking behaviour strategies in the Namibian context [**Phase 4**]

Figure 2 illustrates the Phases of the research process adopted in this study:

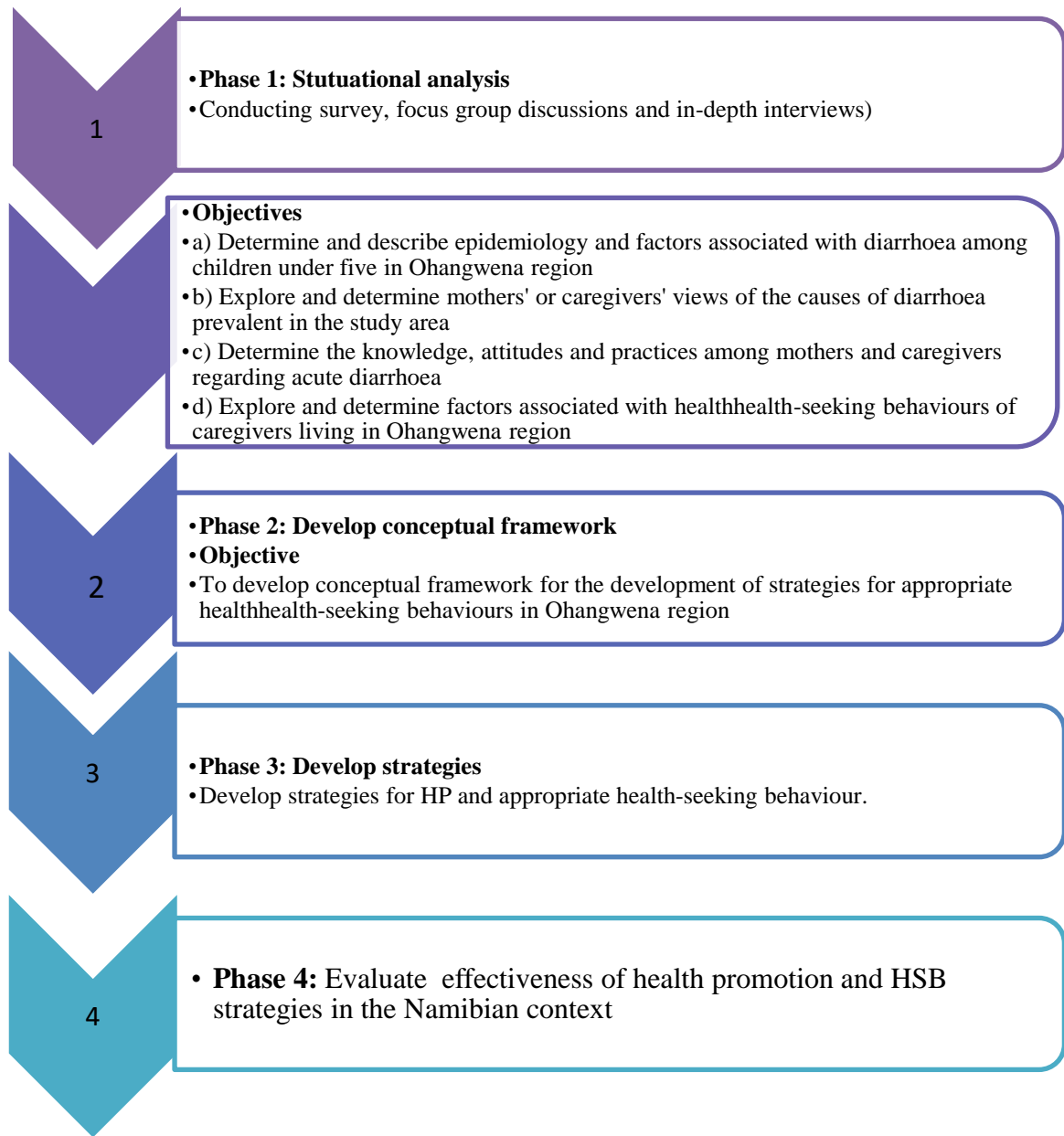


Figure 2: Phases of the research process

## 1.7 SIGNIFICANCE OF THE STUDY

Globally, diarrhoea is one of the most common causes of death in children under five years of age, which is similar to the situation in Namibia, but it is easily prevented by seeking healthcare on time. Few studies have been conducted to assess factors affecting mothers'/caregivers' health-seeking behaviour for diarrhoeal disease in different regions

of Namibia. Furthermore, this study enables one to understand how to influence mothers' or caretakers' behaviour by identifying associated factors and implementing interventions to help mothers or caregivers seek appropriate care for their children without delay. Also, identifying factors that influence care-seeking is essential for health workers to create community awareness and formulate policies to improve good health-seeking behaviour to promote child health.

Furthermore, the information for the current study can be used as a baseline for other researchers who want to conduct further research. Hence, this study is important to bridge the information gap on health-seeking behaviours in developing countries. Finally, the findings will assist in developing strategies for health professionals and HEWs to promote effective health-seeking behaviour.

#### 1.8 PARADIGMATIC PERSPECTIVE

A paradigm is an analytical manner of looking at a natural phenomenon such as cultural themes, worldviews, ideologies, and mind sets. Researchers need to be capable of understanding and articulating beliefs about the nature of reality.<sup>(29)</sup> Hence the paradigm is used to describe the researcher's 'worldviews', such as schools of thought, perspectives or thinking, or sets of beliefs that inform the interpretation or meaning of research data.<sup>(30)</sup>

This study requires a clear paradigmatic perspective, a model or pattern containing legitimate assumptions, and a design for collecting and interpreting data. Pragmatic worldviews will be adopted using four objectives based on the paradigm's defining characteristics: meta-theory, ontology, epistemology, axiology, methodology assumptions, and rhetoric.<sup>(31)</sup> This study was conducted within a Pragmatism paradigm, employing quantitative and qualitative approaches to collect and analyse both data types simultaneously. Creswell and Clark<sup>(32)</sup> indicate that pragmatism arises from actual situations, actions, and consequences rather than antecedent conditions. Hence, the findings are merged in the current study to provide evidence for strategies. Furthermore, paradigmatic perspectives are vital in studies since they contribute to building a

simplifying research design paradigm. The paradigmatic assumptions for this study are discussed below.

### 1.8.1 Philosophical assumptions and worldviews

Philosophical perspectives designate how a phenomenon should be studied and what constitutes knowledge, thus helping the researcher to specify and refine the types of evidence required, how data is collected and analyzed, and how it will be used.<sup>(33)</sup> According to Crotty, cited in Creswell,<sup>(31)</sup> major elements are required to develop a proposal or a study, such as a paradigm worldview, theoretical lens methodological approach, and data collection methods. Worldview includes assumptions about knowledge and beliefs that inform the researcher's study. For this study, the researcher used a pragmatic worldview as an assumption since the study employed mixed-methods research; hence, pragmatism was regarded as appropriate. The relevant paradigmatic assumptions for this study are discussed below.

#### *1.8.1.1 Ontological assumptions*

Ontological assumptions aim to determine the nature of reality based on the assumptions we make to believe something is genuine or makes sense. Furthermore, the ontology of a paradigm helps the researcher conceptualize the nature and form of reality and what the researcher's beliefs can be known.<sup>(30)</sup> Consequently, this study used a mixed method; therefore, the researcher used multiple measures during the study to maintain objectivity. For the qualitative part, the researchers discovered the reality of the phenomenon based on the interviews and observations made concerning the participants' environment. For the quantitative aspect of the study, the researcher used self-administered questionnaires for data collection. The researcher used an objective view, triangulating qualitative and quantitative and interpreting the data. Multiple measures such as structured interviews, interviews with key-informant, and FGDs were used to determine the epidemiology and factors contributing to diarrhoeal disease, to identify mothers' perceptions of diarrhoea causes, and parents' or caregivers' knowledge, attitudes and practices (KAP) and to explore factors negatively influencing HSB in the area. The research aimed to find

meaningful indicators related to what is happening on the ground concerning the problem under investigation.

### *1.8.1.2 Epistemological assumptions*

Epistemology is derived from the Greek word “episteme,” meaning knowledge. Epistemology in research simply describes how the researcher knows something or the truth or reality.<sup>(30)(29)</sup> Moreover, the nature of the knowledge is objective and independent of the researcher's feelings, interests, and values. Furthermore, epistemology is considered relevant for analyzing knowledge and understanding characteristics that interrelate with the individual ability to distinguish what they know and how they acquire the knowledge. In the current study related to the assumption mentioned above, the researcher produced objective knowledge from the district’s natural environment; the respondents were independent, and the researcher did not endeavour to influence them. Based on the qualitative method, the findings were obtained from the mothers or caregivers, health workers (doctors, nurses, and HEWs), priests and traditional healers, who shared their experiences related to HSB in their natural work environment through individual interviews and FGDs. Furthermore, data were obtained using direct quotations from the participants. For the quantitative method, the researcher collected data by using a questionnaire. The researcher did not interfere with the study's findings as she was an independent researcher.

### *1.8.1.3 Axiological assumptions*

Axiology has to do with the researcher’s values and ethical issues that need to be considered when planning a research proposal and interpreting the results, defining, evaluating, and understanding concepts of right and wrong behaviour relating to the research. In the current study, the researcher was guided by four criteria of ethical conduct: teleology, deontology, morality criterion and fairness.<sup>(30)</sup>

**Teleology:** This enabled the researcher to consider the philosophical approach to making decisions of value or the right choices. **Deontology:** made the researcher realize that the research intends to benefit participants, the scholastic community, the public, and the researcher during every step of the investigation. **Morality criterion:** The researcher

adhered to intrinsic values during research. **Fairness:** The researcher adhered to practising justice for all research participants and upheld their rights.

Subjectivity played a role in the qualitative part of the study when obtaining data through face-to-face and FGD interviews. At the same time, objective views came in during the quantitative survey with the questionnaires.

#### *1.8.1.4 Methodological assumptions*

Methodological assumptions refer to the process of research, which involves choosing the right research design, methods, approach and procedures by using a well-planned investigation to find out something.<sup>(30)</sup> This study used the pragmatic approach, which involves both quantitative and qualitative methods. The quantitative method was used to determine diarrhoea epidemiology and to describe factors associated with diarrhoea among children under five, to determine KAP among mothers or caregivers regarding acute diarrhoea, and to determine factors related to HSB. The qualitative method was used to explore mothers' or caregivers' perceptions of the causes of diarrhoea in the study and to explore factors associated with the health-seeking behaviour of mothers or caregivers. Methodology guided the researcher in deciding what type of data is required for the study, which data collection tools would be most appropriate for her study, analysis methods, and the framework used in developing strategies.

#### *1.8.1.5 Rhetoric*

Rhetoric encompasses the language used by the researcher throughout the research process.<sup>(31)</sup> Using a mixed methodology in the qualitative part of the study, the researcher used informal, simple language during recording and verbatim transcription of data and in developing the theme and sub-themes. Furthermore, the study's findings were presented using direct quotations from the participants. The quantitative part of the study used formal language during the construction of the questionnaire, data entry, data analysis and reporting of the study findings.

## 1.9 THEORETICAL BASIS OF THE STUDY

The theoretical framework for research guided and assisted the researcher in situating and contextualizing formal theories in her study.<sup>(34)</sup> Theoretical foundations were included in the current study since it comprises theories and models that facilitate the researcher to understand the problem under study. The theories used in this study are described below.

### ❖ **Kroeger's framework for health-seeking behaviour (1983)**

Kroeger's framework for health-seeking behaviour was used in developing the data collection instruments and guided in the literature review. Furthermore, Kroeger's framework uses a mixed methodology to study individual behaviours and the social phenomenon of health-seeking. Nevertheless, this framework encompasses most aspects of a community's typical health-seeking behaviour, particularly in developing countries. Furthermore, in the current study, Kroeger's framework was adapted by combining both quantitative and qualitative methods (see Chapter 3) to study individual behaviours, as well as the social phenomenon of the health-seeking behaviour of a community, especially in developing countries such as Namibia.

### ❖ **McKinlay–Health-seeking behaviour in context (1972)**

This study uses the theoretical framework put forth by McKinlay.<sup>(35)</sup> As identified in the literature review, this framework incorporates many key influences on health-seeking behaviour. Based on this framework, six distinct analytically and culturally oriented approaches guide individuals' decision-making about when, where and how to seek treatment or help. The six factors involved include socio-economic, geographical, socio-demographic, social-psychological, socio-cultural, and organizational factors. McKinlay's theoretical framework has been applied in both developed and developing countries. Therefore, to gain a complete understanding of health-seeking behaviour, the researcher followed McKinlay's approach by including the six proposed approaches in the developed questionnaire and guided in developing the strategies.

### ❖ **Practice theory of Dickoff, James and Wiedenbach (1968)**

The researcher used the Practice-oriented theory<sup>(36)</sup> to conceptualize the findings. Practice theory proposes a survey list which includes variables such as the context, the agent, recipient, procedures, dynamics and terminus. The concepts in the current study were clarified and defined and their interrelatedness was synthesised and applied in Phase 2 during the development of the conceptual framework of this study. The conceptualisation process helped with the development of strategies and is explained in detail in Chapter 5 (page 204).

### ❖ **Howe's Compass Aligned Performance System (1999)**

After conceptualising the findings from Phases 1 and 2, this phase outlined the strategies followed in developing the strategies. In addition, the strategy in this study was designed using Howe's 'c@ps', which was developed in 2011.<sup>(37)</sup>

The abovementioned theory comprises the vision, mission, strategic objectives and key performance indicators. Furthermore, it enables the process of presenting the strategies in the summary and graphic forms to guide the execution of the research process.<sup>(36)</sup> Howe's model c@ps used during the strategy development in Phase 3 of this study is described in detail in (Chapter 6).

#### **1.10 DEFINITION OF KEY CONCEPTS**

**Health-seeking behaviour** is defined as: "an action carried out by individuals who perceive themselves to have a health problem or to be ill, to find a suitable cure."<sup>(38)</sup> In the current study, health-seeking behaviour is when care is sought promptly within 24 hours from skilled health care providers after recognizing acute diarrhoea as well as the use of Oral Rehydration Salts (ORS) solution and zinc supplements in the management of diarrhoea.

**Appropriate health-seeking practice:** Care sought from a skilled healthcare provider in government or private health facilities (hospitals/clinics), as well as the use of Oral Rehydration Salts (ORS) solution and zinc supplements in the management of diarrhoea.<sup>(39)</sup> In the current study, appropriate health-seeking practice is when care is sought from skilled health care providers after recognizing acute diarrhoea as well as use of Oral Rehydration Salts (ORS) solution and zinc supplements in the management of diarrhoea and did not practice perineal cutting as part of diarrhoea management.

**Inappropriate health health-seeking practice:** Use of other types of care which are not according to the definition of appropriate health-seeking practice, such as purchasing medicine without a prescription, home remedies, traditional and spiritual healers, as well as those who take no action for the perceived illness.<sup>(40)</sup> In the current study, inappropriate health-seeking practice is when care is not sought from skilled health care providers after

recognizing acute diarrhoea, purchasing medicine without a prescription, using home remedies traditional healers or spiritual or those who did not take action in the management of diarrhoea and did practice perineal cutting as part of diarrhoea management.

**Caregivers:** A person (male or female) responsible for caring for the child, who could be a child's relative.<sup>(41)</sup>

**Parent:** A person's father or mother giving birth to or adopting and raising a child.<sup>(41)</sup>

**Under five children:** Children aged 0-59 months <sup>(41)</sup>.

**Diarrhoea:** “Passage of three or more loose or liquid stools per day”, or more frequently than is normal for a child. It is usually a symptom of gastrointestinal infection which can be caused by a variety of bacteria, viral or parasitic organisms.<sup>(42)(16)</sup>

**Household:** In this study, a household is a group of related or unrelated persons who live together in the same dwelling or unit, who share housekeeping arrangements and meals, and who are considered a single unit.<sup>(23)</sup>

## **1.11 OUTLINE OF CHAPTERS**

The chapters in the current study are as follow:

**CHAPTER 1 INTRODUCTION AND BACKGROUND OF THE STUDY** - This chapter introduces the study, background information, and overview. These include aims and objectives, problem statements, ethical considerations, and definitions of concepts used in the study.

**CHAPTER 2 LITERATURE REVIEW** -This chapter presents the literature review and conceptualization; it provides information from an in-depth literature review on health promotion and health-seeking behaviours. This includes the epidemiology and factors associated with diarrhoeal disease, the mothers' or caregivers' perceptions of the cause and management of diarrhoea, their knowledge, attitudes, and practices regarding diarrhoea disease, and the factors associated with health-seeking behaviours.

**CHAPTER 3 RESEARCH DESIGNS AND METHODS** - This chapter explains the study designs and methods used to execute the study. Furthermore, the chapter discussed situational analysis that covered approaches and methodologies (qualitative and quantitative strands), data collection and analysis, reliability and validity, pilot study,

measures to ensure trustworthiness, and data analysis. The chapter discussed other phases of the study that encompassed the development of the conceptual framework in phase 2 and the development and verification of strategies to promote appropriate HSB In phase 3. This chapter concludes with a description of the ethical aspects applied during the study process.

**CHAPTER 4 PRESENTS THE RESEARCH FINDINGS AND DISCUSSIONS** -This chapter presents quantitative and qualitative results.

**Quantitative:** Describe epidemiology and factors associated with diarrhoea among children under five years, KAP among parents/caregivers regarding diarrhoea among children under five years, and factors related to health-seeking behaviours of parents/caregivers of children under five with diarrhoea. Furthermore, the chapter presents the demographic characteristics of respondents in the study. The results and discussion regarding the epidemiology and factors associated with diarrhoea among under-five children, parents/caregivers' knowledge, attitude, practices among parents/caregivers regarding diarrhoeal disease among under-five children, and factors related to HSB of parents/caregivers of children under five with diarrhoea are also included.

**Qualitative:** Findings from the study regarding parents'/caregivers perceptions related to factors contributing to diarrhoea among children under five and factors associated with health-seeking behaviour of parents/caregivers of children under five with diarrhoea, as presented in this chapter. The chapter begins with the demographic characteristics of participants, followed by the presentation of the main findings. Then, the results are presented in a summarised table with themes, sub-themes, and narrative format.

**CHAPTER 5 PHASE 2 CONCEPTUALIZATION FOR THE DEVELOPMENT OF STRATEGIES**

This chapter describes the conceptual framework of the study.

**CHAPTER 6 RECORDS THE DEVELOPMENT OF STRATEGIES AND VERIFICATION-** This chapter records the development of strategies and verification.

**CHAPTER 7 CONCLUSION AND RECOMMENDATIONS.**

This chapter presents the conclusions, contributions, limitations, and recommendations of the study.

## **1.12 SUMMARY**

This chapter presented the introduction and background of the study, the problem statement and the purpose and objectives of the research. Furthermore, this chapter outlined the paradigmatic and philosophical perspectives as defining key terms used in the study. The following chapter describes the relevant literature reviewed in terms of this study.

## **CHAPTER 2**

### **LITERATURE REVIEW**

#### **2.1 INTRODUCTION**

This chapter presents the context of the review from published studies and the range of related literature. The researcher reviewed the literature to understand known factors associated with diarrhoea's epidemiology, parents' or caregivers' perceptions related to causes of diarrhoea, and parents'/caregivers' knowledge, attitude, and practices related to causes, management, and prevention of diarrhoea. The review's main aim was to identify and evaluate studies on HSB for diarrhoeal disease to understand the structure of the subject, the theories, and related thoughts, as well as to justify the significance of the problem. Going through a range of literature helped the researcher understand factors associated with the HSB reported in studies conducted in similar environments in other parts of the world.

Furthermore, this chapter comprises sections describing the topics covered in the thesis. The first looks at the epidemiology and factors related to diarrhoea prevalence and under-fives nutritional status. The second section looks at the mother's or caregiver's perceptions related to the causes of diarrhoea. The third section looks at parents' or caregivers' knowledge, attitudes and practices related to preventing and managing the diarrhoeal disease. And finally, the fourth section looks at factors contributing to health-seeking behaviours. This chapter ends with a review of models of health-seeking behaviour that have been used and polished through several studies in developing and developed countries.

#### **2.2 LITERATURE SEARCH STRATEGIES**

According to Atkinson and Cipriani (2017), one reason for conducting literature reviews is locating information on a topic or identifying gaps in the literature for future studies.<sup>(43)</sup>

A comprehensive search strategy using multiple databases was employed to find relevant studies to be included in the current study. In this study, the researcher initially identified

keywords from the title to be able to come up with searching strategies. The Boolean operators AND and OR, guided by the keywords, were used to identify searching strategies. Keywords and derivatives of “strategies for health promotion”, “health-seeking behaviour”, “parents and caregivers”, children under five years”, and “acute diarrhoea” were used.

Furthermore, the literature search strategy was carried out with guidance from librarians of the University of Namibia (UNAM). The data search included the following e-resources databases: EBSCOhost, HINARI, PubMed, SCIENCE DIRECT, SAGE Journals, and google scholar was also searched. Information was also uncovered from books and government documents, and reports. Peer-reviewed qualitative and quantitative research studies were considered for inclusion. Furthermore, this review only included papers available in English. Non-peer-reviewed sources from non-reputable websites were excluded.

### **2.3 SECTION 1: ESSENTIAL CONCEPTS REGARDING EPIDEMIOLOGY AND FACTORS ASSOCIATED WITH DIARRHOEAL DISEASE**

It is reported that every year there are 1.7 billion cases of childhood diarrhoeal disease globally.<sup>(5)</sup> The prevalence of diarrhoea continues to be high, especially in developing countries, including Namibia. For example, a study conducted in Dendi District in Ethiopia reported that diarrhoea prevalence was 22.1%.<sup>(44)</sup> Severe diarrhoeal disease and pneumonia are the most common reasons for the hospital admission.<sup>(2)</sup> According to a study conducted in Bahir Dar City, Northwest Ethiopia, diarrhoea prevalence was 14.5%.<sup>(45)</sup> Diarrhoeal disease is ranked as the second most common cause of death among children under five, leading to an estimated 1.87 million deaths globally.<sup>(3)</sup> More than half a million children under five were estimated to have died from the diarrhoeal disease in 2015.<sup>(4)</sup> Diarrhoea remains a public health problem in developing countries, accountable for more than 760,000 deaths of children under five years yearly in both low and middle-income countries.<sup>(5,6)</sup> Most deaths occur in Africa and South Asia; however, nearly half of those deaths occur in Africa.<sup>(3,7)</sup> Although, over the past 25 years, mortality from diarrhoea in under-fives has declined globally, in sub-Saharan Africa, morbidity from diarrhoeal disease remains high due to inadequate water, poor sanitation/hygiene, insufficient

breastfeeding, and malnutrition.<sup>(8)</sup> Increased internal migration to African cities results in overcrowding and is often associated with diarrhoea outbreaks among the under-fives.

Children under five are the most vulnerable to diarrhoeal disease, especially during the first two years of life.<sup>(9)</sup> Furthermore, it is reported that in developing countries, 12 million children die every year before they reach their fifth birthday.<sup>(46)</sup> The burden of diarrhoea deaths is disproportionately shared between low and middle-income countries. Even though since the establishment of the UN Millennium Development Goal 4 (MDG4) establishment in 2000, diarrhoea morbidity has declined annually by 6.5%, mortality due to diarrhoeal disease remains high. Moreover, childhood diarrhoea remains a public health problem and is among the main killers of children under five globally.<sup>(9,47)</sup> Various studies have indicated that epidemiologic factors contributing to diarrhoea occurrence are complex.<sup>(43,44)</sup> Nevertheless, factors such as residential area, unemployment, household income, age of mother or caregiver, number of people per household, access to information, type of toilet facilities, access to safe drinking water, child immunization status, nutritional status, caregiver age and number of sleeping rooms are some of the factors reported to contribute to the prevalence of diarrhoea.<sup>(9,50-52)</sup>

According to a study conducted in Mbour, Senegal, by Thiam et al.<sup>(8)</sup>, factors such as unemployment of parents, use of shared toilets, and lack of treatment of stored drinking water were found to be significantly associated with diarrhoeal prevalence. Equally, according to a cross-sectional study conducted in Eastern Ethiopia, major risk factors for diarrhoea were improper refuse disposal practices, lack of hand-washing facilities, living in a rural area, presence of two or more siblings in a household, and being a child under five years of age, were significantly associated with diarrhoea prevalence.<sup>(9)</sup> Based on a study conducted in Bangladesh on prevalence and HSB for diarrhoeal disease, several factors such as child age, age-specific to height, age and occupation of the parents, residential area, and type of toilet facilities were found to be significantly associated with the prevalence of diarrhoea predicted directly by crude ORs.<sup>(6)</sup> The possibility of reducing morbidity and mortality related to diarrhoea requires well-informed parents. Vaccine-preventable pathogens may cause diarrhoea cases; therefore, children's immunization plays a vital role in preventing diarrhoea.<sup>(3)</sup> It has been reported that several countries have

successfully used mass media, especially radio and television, to bring regular messages on breastfeeding and advocacy for policy support for Control of Diarrhoeal Diseases (CDD) programmes.<sup>(6)</sup>

In Namibia, especially in the Ohangwena region, diarrhoeal disease is estimated to affect 19% of children under five.<sup>(23)</sup> According to the Ohangwena Health Directorate's Annual Report of 2016/2017, 22,201 children under five were diagnosed with diarrhoea, of which 11,507 (52%) were from Engela Health District, where the current study took place. Similarly, it was estimated that 62.3% of Ohangwena region's population lives in the Engela district. This massive population in the district resulted in the spread of informal settlements and a lack of provision of basic water supply, solid waste removal, and toilet facilities. Such living conditions are reported to create a high risk for water-borne and gastrointestinal diseases, including diarrhoeal diseases.<sup>(8)</sup>

Despite the high prevalence of diarrhoea in Namibia, there are few reports from population-based studies. Moreover, more data are needed to understand better factors associated with diarrhoea's prevalence in this setting. Such data will be valuable for planning, designing, and implementing interventions and prevention strategies at the community level aimed at decreasing morbidity due to diarrhoea. Thus, this study's objective was to assess diarrhoea's epidemiology and associated factors among children <5 years old.

### **2.3.1 Clinical types and complications**

There are four clinical types of diarrhoeal disease<sup>(53)</sup> namely:

1. *Acute watery diarrhoea*, which includes cholera; this type of diarrhoea lasts several hours or days and can lead to weight loss if feeding is stopped, and the main threat is dehydration.
2. *Acute bloody diarrhoea*, also referred to as dysentery. Dehydration may also occur with this type of diarrhoea; however, the main dangers are damage to the intestinal mucosa, sepsis, malnutrition, and other complications.

3. *Persistent diarrhoea*, which lasts 14 days or longer. This type can also cause dehydration; however, malnutrition and severe non-intestinal infection are the main danger.

4 *Marasmus or kwashiorkor*: (diarrhoea with severe malnutrition). With this type, the main dangers are severe systemic infection, dehydration, heart failure, and vitamin and mineral deficiency. Hence, each type of diarrhoea management should prevent or treat dehydration and other main danger(s) that are present.<sup>(54)</sup>

Dehydration usually is the most severe threat posed by diarrhoea. During the diarrhoeal episode, electrolytes such as sodium, chloride, potassium, and bicarbonate are lost through liquid stools, vomit, sweat, urine, and breath, leading to dehydration. If fluids are not replaced, especially in the case of persistent diarrhoea that lasts for 14 days or longer, it can lead to malnutrition and non-intestinal severe infections, and dehydration may occur as well.<sup>(21)</sup>

### **2.3.2 Causes of diarrhoeal disease**

Most commonly, diarrhoea is caused by intestinal infections. Bacteria such as *Escherichia Coli*, *Campylobacteria jejuni*, Salmonella, Shigella bio-serotype, and viruses such as Adenovirus, Rotavirus, and Norwalk virus are the common etiological agents.<sup>(56)</sup> According to Guarino et al., Rotavirus is frequently associated with dehydration and is a severe infectious agent.<sup>(57)</sup>

Parasites like *Entamoeba Histolytica* and *Giardia Lamblia Cryptosporidium* also cause diarrhoea.

Cholera is the most feared form of diarrhoea, caused by *Vibrio cholerae*, gram-negative bacteria, which cause profuse diarrhoea with stools like rice water; if untreated, fluid loss can quickly lead to death.

Dysentery implies the passing of stools with blood, most commonly caused by Shigella and Amoebiasis. This type was more hazardous before the advent of antibiotics, and epidemics have killed many soldiers and civilians during wars. It is still endemic in many countries and sometimes causes epidemics.

### **2.3.3 Management of diarrhoea**

Diarrhoea is treated based on the clinical type of the illness, which can easily be determined during an examination of the child, and laboratory investigations may not be necessary. Acute watery diarrhoea is treated with oral rehydration solution (ORS), clean water, sugar, salt, and a supplementary treatment course of dispersible 20mg zinc tablets for 10-14 days. Zinc tablets shorten the duration of diarrhoea and improve results.<sup>(53)</sup> The main risk is dehydration and weight loss if feeding is discontinued. Antimicrobial treatment is used only for bloody diarrhoea, severe cholera cases, and non-intestinal infections, e.g., pneumonia. Amoebiasis is uncommon in children; therefore, antiprotozoal drugs are only indicated when there is laboratory evidence. Anti-diarrhoeal and anti-emetics have no practical benefits in children with acute or persistent diarrhoea. Significantly the parents/caretakers of children under five should be taught about the importance of hygiene practices and feeding to reduce diarrhoea morbidity.<sup>(53)</sup>

### **2.3.4 Clinical care for Diarrhoea in Namibia**

After gaining independence in 1990, the Ministry of Health and Social Services (MoHSS) deviated from providing health services based entirely on curative services, as inherited from the colonizing government, and adopted a Primary Health Care (PHC) approach. PHC is based on health promotion, disease prevention, curative, and rehabilitation services.<sup>(23)</sup> Several programmes, including the Health Extension programme (HEP), which aims to deliver community and family-centred services to promote, prevent, rehabilitate, and provide basic cures, were designed to ensure equitable access to health services for all Namibians, especially those living in remote areas of the country.

The Integrated Management of Child Illnesses programme (IMCI) was also implemented, which seeks to prevent deaths from diarrhoea, pneumonia, malaria, and other diseases in children under five. Hospitals, clinics, and health centers all over the country are equipped with medications, policies, guidelines, and treatment manuals used as guidance when treating children under five <sup>(39)</sup>.

The National Control of Diarrhoeal Diseases (CDD) programme contains four main strategies <sup>(53)</sup>, namely:

- Empowerment of parents/caregivers with children under five with knowledge, skills, and attitudes to enable them to take preventive measures against the diarrhoeal disease.
- Capacity building for health workers to provide appropriate case management for children under five presenting with diarrhoeal disease.
- Support to ensure access to ORS for children under five with diarrhoea and to receive proper feeding and home-prepared fluids during the diarrhoeal episode.
- To empower parents/caretakers and communities, educational materials on preventive measures of diarrhoea and how to mix and administer Oral Rehydration Therapy (ORT) were developed and distributed to parents at the health facilities level, in addition to radio and television messages.

Health workers and Health Extension Workers (HEWs) were trained to deliver promotive, preventive, and basic curative services at the community and family levels in their catchment villages at the regional and local levels. Health Extension Workers play a significant role in assessing children under five with diarrhoea, advising parents on ORT and the use of zinc, and referring children with severe illnesses to the healthcare facility.<sup>(58)(39)</sup>

Some of the duties of HEW are ensuring that all children have completed scheduled immunization by the age of 9 months and encouraging families to seek timely healthcare services for sick children. Besides the government efforts to prevent morbidity and mortality among children under five, the NDHS reported that 22% of children who suffered from diarrhoea were given either home remedies or other unspecified medicines, and about 10% did not receive any treatment at all.<sup>(23)</sup>

### **2.3.5 Diarrhoea epidemiology related to the nutritional status of children under five**

The diarrhoeal disease continues to be the leading cause of childhood morbidity and mortality and is a significant cause of malnutrition in developing countries. The most common causes of death are acute respiratory tract infection, diarrhoeal diseases, and malnutrition.<sup>(5)</sup>

Malnutrition remains a public health problem in most developing countries and is one of the significant causes of child death worldwide. In many countries, the nutritional problem

has not yet been resolved to the desired level, despite many government interventions to address the issue.<sup>(59)</sup> Skoufias, Vinha, and Sato indicate that in 2014, 171 million children under five had stunted growth.<sup>(60)</sup> Based on a study conducted in Nepal, it was reported that nearly 37% of children were suffering from being underweight, 41% from stunting, and 11% were suffering from wasting.<sup>(61)</sup> Equally, in Sub-Saharan Africa, under-nutrition is reported to be overwhelming; 58 million under-five children were too short for their age, and 13.9 million weighed too little for their age.<sup>(62)</sup> A Global Burden of Disease study in 2016 showed that childhood wasting was among the risk factors for diarrhoea, responsible for 80.4% of diarrhoeal deaths in children under five.<sup>(47)</sup> According to WHO, it is estimated that malnutrition is the underlying cause of 30-35% of deaths of children under five.<sup>(63)</sup> Almost three-fifths of those deaths result from severe acute malnutrition (SAM). However, malnutrition-related deaths can be prevented if identified and adequately managed.<sup>(64)</sup>

Malnutrition happens due to absolute deficiency or excess of essential nutrients, and children under five are the most vulnerable group to malnutrition and micronutrient deficiency.<sup>(65)</sup> Consequently, in the long term, children develop abnormalities related to behavioural problems, physical and mental health problems, and low educational achievement.<sup>(66)</sup> Poverty and diseases are the leading causes of malnutrition, and many studies found socioeconomic status to be significantly associated with malnutrition.<sup>(59)</sup> Nevertheless, according to the World Bank,<sup>(67)</sup> malnutrition involves multiple sectors. Instantaneous causes are associated with food and nutrient intake and health conditions; underlying causes are rooted in the household and community context in which under-nutrition occurs, such as a change in climate, agricultural practices, lack of access to clean water and sanitation, and poor caregiver education. Nonetheless, fundamental causes of malnutrition are actually embedded in institutional, political, and economic issues related to poverty reduction and economic growth. Moreover, for policy decisions, resource allocation, and target interventions, measurement of prevalence, incidence, and mortality associated with malnutrition and diarrhoeal disease are crucial.<sup>(68)</sup>

In Namibia, malnutrition has remained a public health problem since independence in 1990; levels of stunting have remained above the WHO 20% cut-off point, even though

the country's economy has grown substantially during the same period.<sup>(69)</sup> Food and nutritional insecurity are widespread; Namibia can only produce 50% of its cereal needs; consequently, food is mainly imported from South Africa and sometimes from Zambia.<sup>(70)</sup> The country is faced with recurrent droughts and floods interacting with poverty, contributing to the levels of malnutrition seen in the country. According to the NDHS, in 2013, 24% of children under five were stunted, and 8% were severely stunted. Children from rural areas accounted for 28% and 17% from urban areas. However, Ohangwena Region, where the current study was conducted, was in the lead compared to other regions in the country, accounting for 37% of malnourished children.<sup>(23)</sup>

## **2.4 SECTION 2: PERCEPTIONS OF PARENTS OR CAREGIVERS TOWARDS THE CAUSES AND MANAGEMENT OF DIARRHOEA IN THE STUDY AREA**

### **2.4.1 Parents or caregiver perceptions towards causes and prevention of diarrhoeal disease.**

Diarrhoea remains one of the leading causes of child morbidity and mortality, especially in developing countries.<sup>(71)</sup> In sub-Saharan Africa, parents/caregivers exhibit poor perception of the signs of dysentery, dehydration, and management of diarrhoea.<sup>(39)</sup>

Parents or caregivers are reported to have different perceptions related to diarrhoeal disease. According to a study conducted in Temeke municipality, Tanzania, approximately 30% of the respondents regarded diarrhoea as part and parcel of the child's normal growth process and as unavoidable.<sup>(73)</sup> Parents' or caregivers' perceptions of childhood diarrhoea can significantly impact health-seeking and diarrhoeal disease management. Parent or caregiver education plays a critical role in their perceptions of childhood diarrhoea. Those with a low level of knowledge of diarrhoea due to illiteracy are frequently ignorant about the disease.<sup>(74)</sup> Parents' perception and understanding, and management skills of diarrhoeal disease, are essential to minimize the effects of morbidity and mortality associated with the disease.<sup>(75)</sup>

Furthermore, according to the World Health Organization (WHO), diarrhoea's general danger signs are; that the child cannot drink or breastfeed, vomits, has convulsions, or is

lethargic or unconscious.<sup>(76)</sup> In sub-Saharan Africa, parents/caregivers exhibit poor perception of the signs of dysentery, dehydration, and management of diarrhoea.<sup>(39)</sup> Based on a study conducted in northwest Ethiopia, 45.2% of the participants reported unfavourable attitudes about household water treatment. Furthermore, it is indicated that water quality problems exist in rural Ethiopia due to malpractice in water handling at the source point due to inadequate knowledge. Hence, 60–100% of water samples from protected water sources (springs/wells fitted with hand pumps) were reported positive for faecal coliform bacteria.<sup>(77)</sup>

On the other hand, in Namibia, some parents perceived diarrhoea to be caused by parent-related factors, such as having something at their (the parent's) perineum that causes their children to become sick and develop diarrhoea if it is not removed by perineal cutting.<sup>(58)</sup> Furthermore, in Namibia, although programme managers theoretically know the risk factors associated with diarrhoeal diseases in general terms, firsthand evidence is lacking to target the significant risk factors. Specifically, that can contribute considerably to its occurrence and distribution in the region, particularly in Engela District communities where the current study occurred. Factors such as maternal education, identifying the danger signs and recognizing the seriousness of the disease in the indigenous communities may also hinder healthy practices in managing diarrhoeal conditions.<sup>(75)</sup> This study has assessed parents' or caregivers' perception of causes and management of diarrhoeal diseases among children under five in the Engela district in the Ohangwena region.

#### **2.4.2 Parents' or caregivers' home management of diarrhoeal disease**

Diarrhoeal disease is preventable and treatable; however, it is the second leading cause of death in children under five.<sup>(53)</sup> Dehydration is responsible for many diarrhoeal deaths. Evidently, dehydration from acute diarrhoea of any aetiology can be safely and effectively treated in over 90% of cases using Oral Rehydration Salts (ORS) dissolved in boiled water, except when the case is severe.

According to the UNICEF and the WHO, diarrhoea management focuses mainly on two main elements: 1) fluid replacement to prevent dehydration and 2) treatment with zinc.<sup>(55)</sup> Parents or caregivers must have adequate knowledge about the prevention, causes, and

treatment of diarrhoea by using homemade fluids such as fresh fruit juice, milk, salt water solution, breast milk, and other appropriate remedies. Furthermore, parents or caregivers need to recognize signs of dehydration and seek treatment from healthcare facilities to prevent complications.<sup>(78)</sup> Practices such as stopping breastfeeding for the child, restricting fluid intake and food during the episode of diarrhoeal disease, and incorrect use of medications are in conflict with the WHO treatment guidelines and are associated with adverse outcomes.<sup>(40)</sup> According to a study conducted among caregivers of children under five in urban and rural residents of Doba Woreda, Ethiopia, good knowledge of home management of diarrhoea was reported (81%) among urban residents. However, only 38.7% of rural residents had good knowledge.

On the contrary, 55.8% of urban and 85.6% of rural participants had poor home management practices.<sup>(47)</sup> Likewise, a study conducted in Fagita Lekoma District, Awi Zone, Amhara Regional State, Northwest Ethiopia, showed that 62.4% of caregivers had poor home management practices for diarrhoea.<sup>(80)</sup> Furthermore, a study on diarrhoea management in children under five in Sub-Saharan Africa reported a low level of good diarrhoea management in 11 of the 12 surveys, ranging from 17% in Cote d'Ivoire to 38% in Niger.<sup>(81)</sup> According to a study conducted in Temeke Municipality, Tanzania, most participants (71%), used traditional remedies to effectively manage childhood diarrhoea, most commonly using guava leaves and fruits.<sup>(73)</sup> Furthermore, diarrhoeal episodes were reported to be wrongly perceived as part of a normal growth stage of children, and several other illnesses cause it. On the other hand, it is reported that in Namibia, practices of cutting parents in the vaginal and anal areas to relieve their children's suffering from persistent diarrhoea contributed to a lack of motivation to take the children to a healthcare facility.<sup>(58)</sup>

## **2.5 SECTION 3: KNOWLEDGE, ATTITUDE, AND PRACTICES OF PARENTS OR CAREGIVERS RELATED TO DIARRHOEA DISEASE**

### **2.5.1 Knowledge of parents or caregivers about diarrhoea prevention and management among children under five**

Childhood diarrhoea remains a public health problem and is among the leading killers globally of children under five. <sup>(9,47)</sup> Even though most childhood diarrhoea episodes are mild, episodes can result in severe loss of fluids and dehydration, leading to severe health-related consequences and death. <sup>(82)</sup> Most diarrhoea episodes are treated at home by parents/caregivers of under-five children; therefore, their knowledge about the nutrition and management of diarrhoea in children is critically important.

The WHO defines diarrhoea as the passage of three or more loose or watery stools in a 24-hour period. <sup>(42)</sup> Based on a study conducted in Ethiopia, 92.5% of parents correctly defined diarrhoea. <sup>(52)</sup> As stated by the WHO, <sup>(53)</sup> diarrhoea can be prevented through adequate sanitation and drinking safe water and can be effectively treated at home with oral rehydration salts (ORS) or with a solution of clear water, sugar, and salt. Additionally, supplemental treatment with 20mg zinc tablets improves the outcome; if it is not appropriately managed, diarrhoea leads to dehydration, which can severely threaten the affected child's well-being. During diarrhoeal episodes, electrolytes such as sodium chloride, potassium, and sodium bicarbonate are lost through liquid stools, vomit, sweat, urine, and breath, leading to dehydration if fluids are not replaced. <sup>(13,53)</sup> ORS and other fluids can adequately treat less severe dehydration at home to prevent dehydration; hence knowledge about diarrhoea is required. However, according to a study conducted in Tlaxcala, Mexico, signs of dehydration were not associated with seeking healthcare since parents did not recognize them. <sup>(84)</sup> In a Southern Odisha study in India, only 34% of parents had good knowledge about the assessment of dehydration and danger signs, and 44% had poor knowledge about danger signs. <sup>(85)</sup>

Furthermore, parents or caregivers need to know about the danger signs of the diarrhoeal disease since early referral of very sick children is necessary for appropriate treatment. Parents or caregivers failing to identify key danger signs may lead to major complications

and death.<sup>(76)</sup> According to a study conducted in Dire Dawa, Eastern Ethiopia, in 2016, more than half of the participants, 51.2%, identified weakness and lethargy as danger signs of diarrhoeal disease. On the contrary, only 0.7% knew that a marked thirst for water is also a danger sign of diarrhoeal disease.<sup>(83)</sup> Furthermore, a study conducted in peri-urban communities in Cochabamba, Bolivia indicated that significant risk factors for the diarrhoeal disease were caregivers' lack of awareness of personal and food hygiene practices for diarrhoea prevention.<sup>(86)</sup> Furthermore, caregivers were found to lack knowledge about proper food preparation, proper disposal of faeces, and knowledge about hand-washing as prevention, and such lack of knowledge was a significant risk factor for childhood diarrhoea.<sup>(86)</sup>

Adequate sanitation, hygiene, and safe drinking water can prevent a significant proportion of diarrhoeal disease. The possibility of reducing morbidity and mortality related to diarrhoea requires well-informed parents.<sup>(6)</sup> It has been reported that several countries have successfully used mass media, especially radio and television, to bring regular messages on sanitation and hygiene, breastfeeding, and advocacy for policy support for CDD programmes.<sup>(6)</sup>

In Namibia, according to the NDHS of 2013, the infant mortality in the five years preceding the study was 39 deaths per 1000 live births, and the under-five mortality was 54 deaths per 1000 live births.<sup>(23)</sup> These figures indicate that one in every 26 Namibian children dies before their fifth birthday. However, comparing the statistics with the data from previous surveys conducted from 1992-2012, under-five mortality declined by 35%, from 83 deaths per 1000 live births to 54 deaths per 1000 live births in 2013.<sup>(72)</sup>

Furthermore, according to a study conducted in Enemay District, Northwest Ethiopia, 27.6% of caregivers disagreed that diarrhoea is a preventable disease.<sup>(72)</sup> Parents in rural and urban communities lack adequate knowledge about the causes, signs and symptoms, prevention, and treatment of diarrhoea.<sup>(84)</sup> According to a study conducted by Perez-Cuevas et al.,<sup>(54)</sup> 53% of children had received home remedies that were supposed to treat diarrhoea, such as herbal tea, rice beverage, milk, or water.

The knowledge of the parents/caregivers on aetiology, management, and prevention of diarrhoeal disease has not been previously reported in the district; hence it would be beneficial for strategic interventions in the region. Thus, this study's objective was to assess parents'/caregivers' knowledge of aetiology, prevention, and management of diarrhoea among children under five.

### **2.5.2 Attitudes of parents or caregivers towards prevention and home-based management of diarrhoea among children under five.**

To improve infant and child morbidity and mortality, information about parents'/caregivers' attitudes concerning child health in the community is crucially needed.<sup>(85)</sup> Parents'/caregivers' knowledge, attitudes and practice can provide a reliable picture of health-seeking behaviours, homecare practices and recognition of diarrhoea danger signs. Dehydration is the most common cause of death in diarrhoeal disease; such deaths can be prevented or treated. However, based on the study conducted among caregivers of children under five in the Enemay District, Northwest Ethiopia, related to diarrhoea prevention, 27% of the caregivers disagreed that diarrhoea can be prevented<sup>(72)</sup> Treatment with oral rehydration salts (ORS) has been shown to be particularly useful in reducing deaths from this disease.<sup>(13)</sup> Still, according to a study conducted in Dire Dawa, Eastern Ethiopia, more than half (55%) of the respondents disagreed with the provision of oral rehydration solution at home to treat under-five diarrhoeal disease.

Similarly, a considerable number of participants (61.4%) disagreed that children suffering from diarrhoeal disease can be treated at home. Around half of the parents (51.5%), indicated that their children dislike the taste of oral rehydration solution.<sup>(83)</sup> Different preventive methods include breastfeeding, immunization, sanitation, and good hygiene. However, most developing countries are challenged by unsanitary conditions, increased food insecurity, unsound traditional beliefs and practices, varied diet, and poor food, water, and personal hygiene.<sup>(58)</sup> According to a study conducted in Northwest Ethiopia related to household water treatment methods, 45.2% of the participants had an unfavourable attitude.<sup>(86)</sup> On the other hand, parents' or caregivers' knowledge and attitudes are associated with their culture, socio-demographic conditions, access to health education, and other factors.<sup>(60)</sup>

In Namibia, diarrhoeal disease is a public health problem; according to NDHS in 2013, the prevalence of diarrhoea was estimated to be 17%. However, in the Ohangwena region where the current study took place, diarrhoeal disease is estimated to affect 19% of children under five.<sup>(9,24)</sup> Child health and survival can be influenced by social factors such as parents' knowledge, attitude, and practice related to preventing diarrhoea.<sup>(88)</sup> Therefore, the study's purpose was to determine the level of parents' or caregivers' attitudes on preventing and managing diarrhoeal disease among children under five in the Engela District. The key variables on attitude included perceptions of diarrhoea causes, perceptions of the treatment of diarrhoea, and perceptions of the prevention of diarrhoea.

### **2.5.3 Practices of parents or caregivers towards the prevention and home management of diarrhoea among children under five**

In developing countries, it is estimated that 1.7 million people die every year, mostly children under five, due to diarrhoeal diseases from waterborne diseases caused by a lack of basic sanitation and hygiene and poor water quality.<sup>(77)</sup> Clean water, good hygiene practices, and the availability of toilets are essential for children's survival and development.<sup>(89)</sup> According to WHO,<sup>(53)</sup> diarrhoea can be prevented through adequate sanitation and safe drinking water. Based on a study conducted in Southern Odisha, 42% of the participants had poor knowledge about the benefit of a sanitary latrine for diarrhoea prevention.<sup>(85)</sup> Moreover, it is indicated that globally, 2.4 billion people live without adequate sanitation, 946 million still defecate in the open, and 663 million do not have access to an improved water source.<sup>(89)</sup>

However, according to a study conducted among persons living in at-risk settings in Kabul, Afghanistan, the understanding and use of sanitation were found to be low; hence the prevalence of diarrhoea within the households was high among both slum dwellers and internally displaced persons living in camps.<sup>(90)</sup> On the other hand, based on a study on diarrhoea prevention conducted in Juba, South Sudan, 80.5% of the parents indicated that they wash their hands before preparing food and eating, 92% indicated that they cover their water containers, and 55.9% treat their water.<sup>(88)</sup>

According to a study in Enemoy District Northern Ethiopia related to diarrhoea prevention, only 27% of the caregivers disagreed that diarrhoea can be prevented. Consequently, if it is not managed properly, diarrhoea leads to dehydration, which can severely threaten the affected child's well-being. Children under five are the most vulnerable to diarrhoeal disease, especially during the first two years of life.<sup>(9)</sup>

Based on the IMCI guidelines for appropriate diarrhoea case management, parents/caregivers are advised to use ORT, continue feeding, and additional treatment with 20mg zinc tablets.<sup>(91)</sup> Furthermore, a study about dehydration treatment conducted in Tlaxcala, Mexico, related to a similar study conducted in Southern Odisha, in India, 35% of parents had poor knowledge.<sup>(85)</sup> Additionally, 42% had poor knowledge about the sanitary latrine concerning the prevention of diarrhoea. Furthermore, according to a study conducted in the Emergency Pediatric Hospital, Khartoum, Sudan, it is indicated that during diarrhoeal episodes, parents didn't increase the amount of fluid intake or continue breastfeeding during diarrhoea but used antibiotics without medical advice. A very small number of parents were reported to have used ORS to manage the diarrhoeal disease.<sup>(92)</sup> Furthermore, it is indicated that cultural and social misbeliefs often influence diarrhoeal disease management. Therefore, most parents sought health services only when home management failed.

To lessen the morbidity and mortality of children under five, parents need to adopt healthy practices to raise the healthful living condition. However, it is indicated that parents with no schooling have poor practices for preventing diarrhoea compared to those with primary education. Hence, parents' education in preventing diarrhoea among their young children plays an important role.<sup>(88)</sup>

## **2.6 SECTION 4: FACTORS ASSOCIATED WITH HEALTH-SEEKING BEHAVIOUR**

The perception of studying health-seeking behaviours has advanced with time and has ultimately become a tool for understanding how people engage with the healthcare system in their socio-cultural, economic, and demographic circumstances.<sup>(93)</sup> In response to disease, health-seeking depends on individuals' characteristics and availability of health facilities and their social, cultural, and historical context.<sup>(94)</sup> Health-seeking involves a

decision-making process further directed by individual and household behaviour. It can also be subject to community norms, expectations, and healthcare provider-related characteristics. Studies conducted cited cultural and Socio-demographic, socioeconomic, and factors at the level of healthcare providers, such as the quality of medical care in terms of clinical efficiency and the availability of medicines to influence health-seeking behaviour.<sup>(95)</sup>

### **2.6.1 Cultural and Socio-demographic factors**

In most cases, appropriate health-seeking behaviour does not merely depend on an individual's choice or circumstances; it also depends upon the dynamics of communities that influence the well-being of the inhabitants.<sup>(96)</sup> Cultural beliefs and practices in rural communities often lead community members to engage in self-care, use home remedies, and consult traditional healers. Equally important, advice from older women in the home plays a significant role in influencing the HSB; therefore, it cannot be ignored.<sup>(93)</sup> Furthermore, factors such as family size, parity, educational status and occupation of the parent or caregiver are also associated with HSB.

Furthermore, according to a study conducted in the Fatic Region of Senegal, 21.6% of parents or caregivers reported taking their children to a healthcare centre, and 16.4% consulted traditional healers. Nevertheless, related to the urgency of taking a sick child to a healthcare centre, only a small percentage, 17%, took the child on the first day of the disease's onset, compared to more than 30% who consulted traditional healers.<sup>(94)</sup>

Although there is no published information about the role of traditional healers in managing childhood illness in Namibia, it was estimated that in sub-Saharan Africa, up to 70% of the population access traditional healers.<sup>(97)</sup> In an earlier study on ART treatment adherence conducted at Oshakati's Intermediate Hospital in Namibia by Bauleth et al.,<sup>(21)</sup> participants revealed having sought spiritual and traditional healers before going for biomedical care. Some participants reported having stopped their ART medications and gone for traditional and spiritual healing. It is unclear what impact these healers have on parents' health-seeking behaviours and their children suffering from diarrhoea.

According to Lumpkin,<sup>(58)</sup> the practice in Namibia of cutting parents in the anal and vaginal areas when children suffer from persistent diarrhoea does not have any beneficial effects either on the child or on the parents' and caretakers' motivation to seek medical treatment.

Imoh<sup>(58)</sup> indicated HSB to be compromised by community beliefs and practices. Traditional beliefs that breast milk is insufficient for feeding the baby were reported to have contributed to adding supplementary food and preparing food under unhygienic conditions.

Furthermore, it was indicated that parents and caretakers in rural communities opted to use treatment inconsistent with the biomedical model of diarrhoea treatment. They also related diarrhoea to a sexual origin and taboos and transgressions. Children with diarrhoea are often taken to traditional healers or grandparents for treatment.<sup>(58)</sup> Under such circumstances, instead of giving ORS, children with diarrhoea are given traditional home remedies, enemas, and herbal preparations and are only taken to the hospital when they do not get better.<sup>(58)</sup>

Moreover, factors such as religion and cultural and regional differences in the acceptance of using ORS in children suffering from acute diarrhoea have affected the outcome of home management of diarrhoea.<sup>(58)</sup>

### **2.6.2 Socioeconomic factors**

Although in developed countries, the burden of diarrhoeal disease is much lower, with an incidence ranging from 0.5 to 2 episodes per child per year, gastroenteritis remains the primary reason for hospitalization in children under five.<sup>(57)</sup> On the other hand, in low-income countries, children under three years of age experience an average of three episodes of diarrhoea per year. According to Sarker et al<sup>(6)</sup>, diarrhoea remains a significant public health problem in low and middle-income countries, with a prevalence of 5.75% among children under five years in Bangladesh.<sup>(34)</sup> Based on a study conducted in seven low- and middle-income countries, deaths due to diarrhoeal disease in children under five varied from 3% to 30%, with acute watery diarrhoea accounting for 31-69% of those deaths, acute bloody diarrhoea for 12-28% and persistent diarrhoea for 12-56%, it was

also found that at each site 40% of children under five who died from persistent diarrhoea were malnourished.<sup>(13)</sup>

Related to a study conducted in Bangladesh, the nutritional score and wealth index are some factors that significantly influence the health-seeking pattern.<sup>(6)</sup> Many risk factors related to diarrhoea infection are associated with poor socioeconomic conditions. Therefore, diarrhoeal diseases are regarded as a disease of poverty and the poor.

### **2.6.3 Health Providers and the Healthcare System**

The way healthcare services are provided, and the state of the healthcare system have been noted to influence healthcare seeking such services. Patients often choose private doctors over public facilities since they believe their service is more effective, polite, sympathetic, and respectful of privacy.<sup>(98)</sup> According to a study conducted at Chitungwiza Central Hospital in Zimbabwe related to HSB of asthma patients, health-seeking was influenced by factors such as perceived supportive roles of healthcare providers and perceived quality of treatment services and distance from home to the healthcare provider.<sup>(99)</sup> Physicians at the clinics are extremely busy and devote little time to listening to patients' problems. However, according to Wameq et al.,<sup>(98)</sup> those who visited private doctors indicated that private practitioners are the best care providers. The quality of services provided to patients by healthcare workers, including the type of relationship with the patient, contributed to the patient's decision to seek care from alternative sources, including traditional healers and herbalists.<sup>(100)</sup>

## **2.7 SECTION 5: HEALTH-SEEKING BEHAVIOUR MODELS**

Several models have attempted to look into what causes individuals to behave the way they do when challenged with health-related problems.<sup>(101)</sup> Development of accurate theories of health behaviour, it is necessary to know the heterogeneity of health-related behaviours. Nevertheless, the model mostly serves as a catalogue of relevant factors that must be considered in applied research.<sup>(34)</sup> The models permit evaluating the relative weight of different factors influencing health-seeking behaviour to identify challenging areas to intervene with specific health system strategies.

A variety of health-seeking behaviour models were noted to identify possible main factors influencing the health-seeking behaviour of parents or caregivers of children under five suffering from diarrhoea, such as: The theory of health-seeking behaviour, the health belief model, Good’s model, Kroeger model and, McKinlay’s health-seeking behaviour in the context.

### 2.7.1 Theory of Health-seeking Behaviour

The theory of health-seeking (Figure 3) designates that the probability of engaging in health-seeking is influenced by psychosocial variables (habit and norm, affect, expectations, and values about outcomes) and facilitating conditions vis-à-vis the behaviour<sup>(102)</sup> Furthermore, linked to Figure 3: (i), Affect is related to individuals' feelings associated with health-seeking behaviour, such as anxiety about the seriousness of the diagnosis or embarrassment about the examination. (ii) Beliefs or expectations about the likelihood of relevant outcomes of health-seeking and the importance of those outcomes. (iii) Norms include personal (own beliefs about morally correct behaviour in seeking care) and social norms related to health-seeking and interpersonal agreements to engage in health-seeking. (iv) Habits related to one's usual health-seeking behaviour when having symptoms.

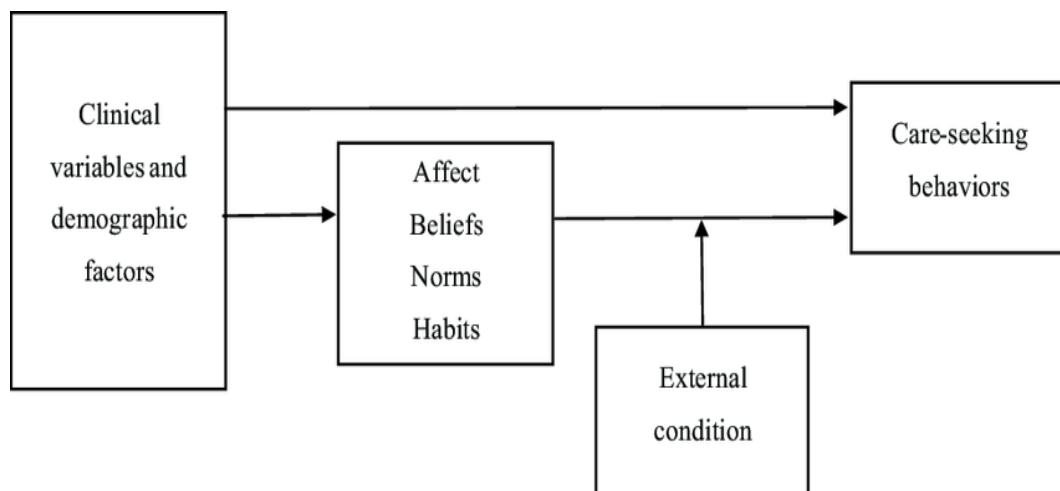


Figure 3: Theory of Health-seeking Behaviour<sup>(99)</sup>

## 2.7.2 Health belief model (HBM)

The HBM was initially developed in the 1950s to explain people's widespread failure to participate in programmes to prevent and detect diseases. However, the model gradually evolved and is widely applied in several disciplines, including public health.<sup>(103)</sup> The model has provided a valuable framework for investigating health-related behaviours and identifying health beliefs. Thus, the model can help explain individual HSB. Based on this model, the action is guided by five factors, namely:

- Perceived severity of illness, health problem, or beliefs about the illness's impact and consequences (threat perception).
- Individual degree of concern related to health matters or health motivation.
- Beliefs related to consequences of health practices and perceived benefits of preventative or therapeutic health practices, and perceived barriers.
- Cues to action which embrace different external and internal factors such as the intensity of disease and symptoms, advice from peer groups or significant others, mass media campaigns, or social networks (health staff, friends, and family). Lastly, health motivation and beliefs are conditioned by the psychological characteristics of individuals (personality and peer group pressure) and by socio-demographic variables (class, age, gender, and religion). See the health belief model diagram below.

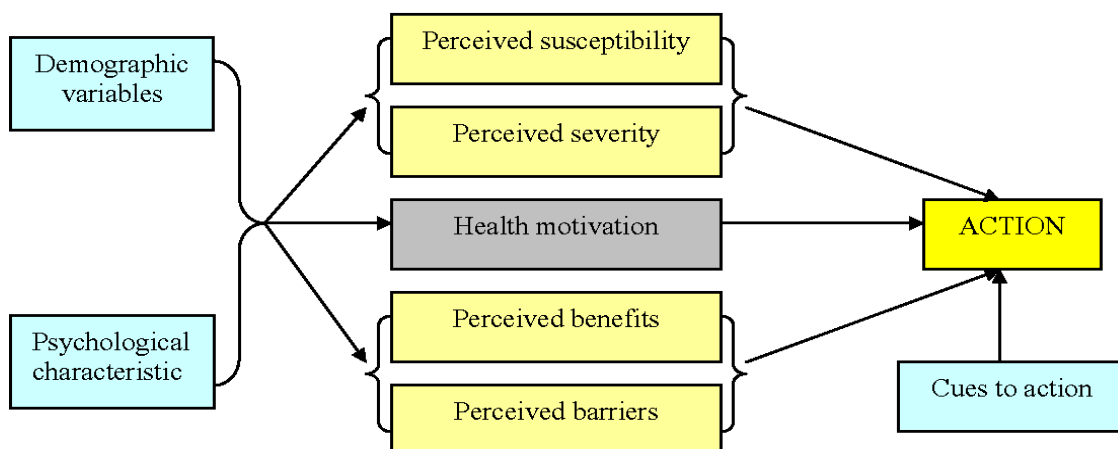


Figure 4: The health belief model (Sheeran & Abraham, 1995) <sup>(99)</sup>

### 2.7.3 Good's Pathway model

The pathway model stresses the importance of understanding the role played by “significant others” in the decision-making process related to health-seeking.<sup>(101)</sup> The model describes the path typically followed by people in their care services, which can either be traditional healers, biomedical facilities, or home treatment, as presented in Figure 5. Contrary to the health belief model, the pathway model emphasizes the importance of "significant others" in the decision-making process in health care. The social context under which the individual operates plays a significant role in health-seeking. Furthermore, the model acknowledges the dynamics of decision-making and illness and looks at health-seeking as a dynamic process. Over time, the perception of disease and social networks may change.

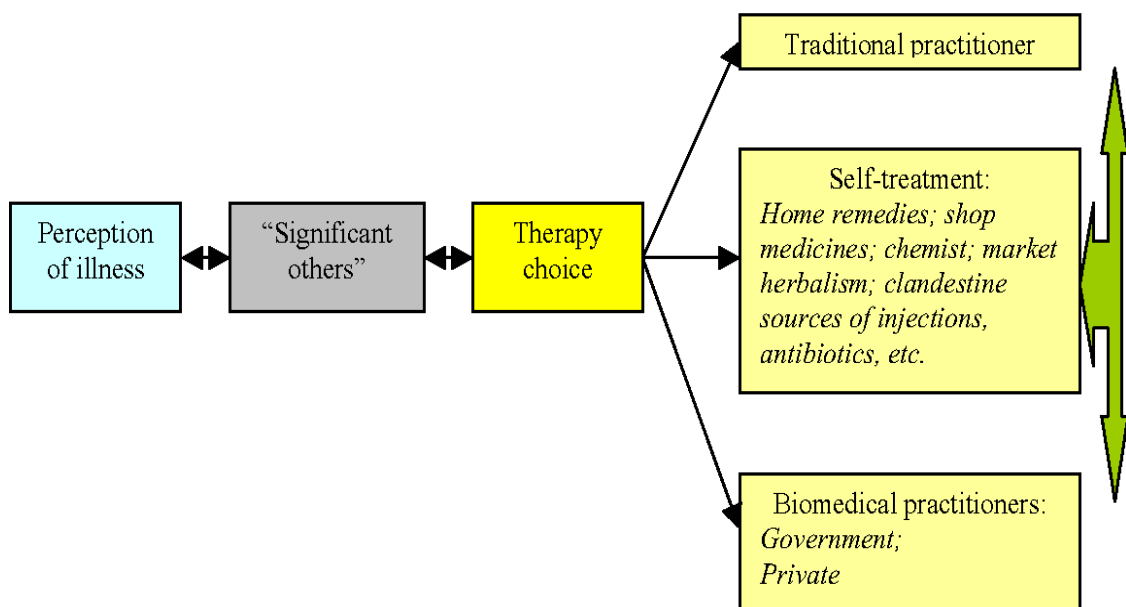


Figure 5: Good's model 1987<sup>(99)</sup>

## 2.7.4 Kroeger's model

Numerous theoretical frameworks related to HSB have been presented in the literature. However, the conceptual framework of Kroeger for assessing health-seeking behaviour incorporates most aspects underlying the characteristic health-seeking behaviour of a community, particularly in developing countries.<sup>(104)</sup> The model recommends a framework of interrelated factors affected by perceived morbidity. These factors include predisposing factors such as: age, sex, marital status, formal education, occupation, status in the household, household size, ethnic group, degree of cultural adaptation, assets (livestock, land, cash, and income), family interactions and social network.<sup>(2)</sup> Patients' perceptions include the etiological model, expected benefits of treatment (biomedical versus traditional), psychosomatic versus somatic disorders and characteristics of the disorder (acute or chronic, severe or minor).<sup>(3)</sup> Aspects of the service include enabling factors and health service system factors: accessibility, appeal (biomedical healers, attitudes towards traditional and others' opinions), costs, quality, acceptability, and communication. The interaction of these factors influences the choice of healthcare resources, either through the traditional healer or biomedical, treatment with medicines from the pharmacy, self-treatment, or no treatment (Figure 6). In the current study, Kroeger's framework aided in conducting a literature review and was used in developing the data collection instrument.

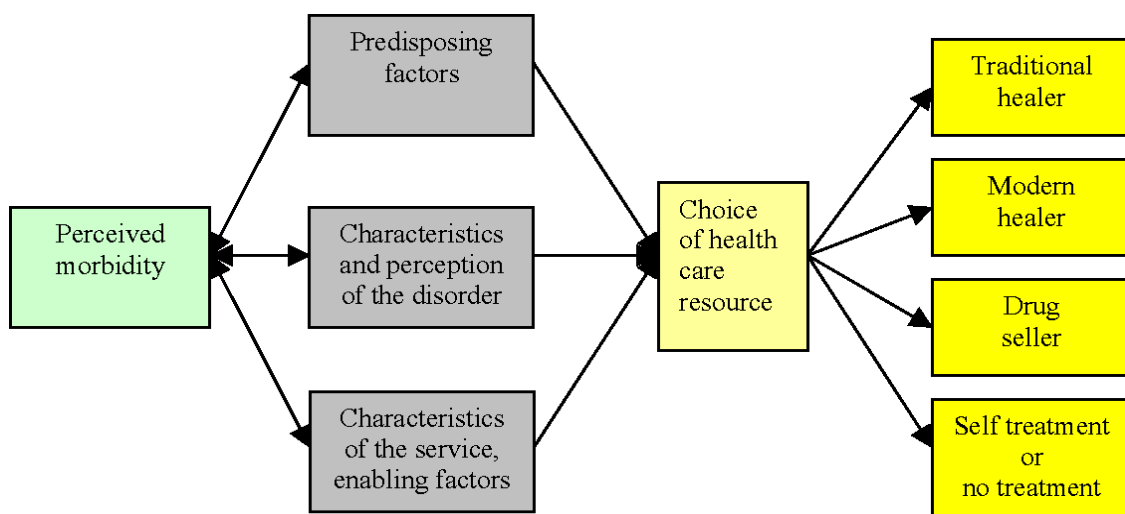


Figure 6: Kroeger's model, 1983 (reference)<sup>(99)</sup>

### **2.7.5 McKinlay–Health-seeking Behaviour in Context**

McKinlay (1972), in his review of HSB, identifies six approaches that guide decisions about when, where, and how to seek help or treatment and divides the framework of research approaches concerning illness behaviour into economic, socio-demographic, geographic, micro-sociological, socio-cultural, and organizational<sup>(35)</sup>

(1) Economical: This entails financial barriers such as income, health insurance coverage, the cost of health services, and the availability of free medications.

(2) Socio-demographic: Such as characteristics like gender, age, social class, and education

(3) Geographic: Involves the geographical proximity of health services

(4) Micro-sociological: Such as individual motivation, perception, and learning

(5) Socio-cultural: Includes norms, beliefs, values, definitions of situations, and lifestyles of different socioeconomic groups

(6) Organizational approaches: Incorporate aspects of healthcare organizations and those working in them.

### **2.7.6 The external factors needed for the analysis of HSB for the development of strategies.**

The McKinlay model seemed to incorporate many of the critical influences on health-seeking behaviour identified in the literature review compared to other models. McKinlay's theoretical framework's six key factors have helped explain the observed health-seeking and health-related behaviour for various diseases under varying socio-cultural and economic settings in developing countries and sub-Saharan Africa.<sup>(35)</sup> Hence a fuller understanding of HSB is likely to follow McKinlay's approaches, including socioeconomic conditions, geographical, socio-demographic, micro-sociological, socio-cultural, and organizational factors with differences based on the specific cultural and societal context. These factors will be taken into consideration when analyzing to develop strategies.

**Geographical factors.** The geography of a country has been noted to influence health-seeking behaviour in many developing and sub-Saharan African countries. For example,

distance to the healthcare facility, low public transport, and associated costs have been noted to influence health-seeking behaviour. <sup>(105)(106)</sup>

**Socio-demographic factors.** In developing countries, demographic variables such as family size, education status, head of the family, age, gender, and marital status influence health behaviour. <sup>(105)</sup>

**Social-psychological factors.** Personality characteristics have influenced HSB. Psychological readiness or a favourable attitude to seeking help has been found to facilitate help-seeking. Lack of awareness and basic knowledge about diseases has contributed to delays in health-seeking. <sup>(106)</sup>

**Socio-cultural factors.** Characteristics such as cultural factors influence the caregiver's perception of illness severity. <sup>(52)</sup> According to McKinlay's model, HSB is also influenced by several socio-cultural factors.

**The organization of the health system factors.** Besides looking at factors outside the biomedical healthcare system that may prevent patients from attending health facilities, McKinlay's model also looked at the health service factors that can attract or deter a patient from visiting health services.

Based on the above-mentioned facts, this study adopted the McKinlay framework approach by including the six proposed approaches in the developed questionnaire and guided in developing the strategies.

## **2.8 SECTION 6: STRATEGIES TO PROMOTE HEALTH AND ENHANCE PROPER HEALTH-SEEKING BEHAVIOUR**

Health-seeking behaviour is defined as: “an action carried out by individuals who perceive themselves to have a health problem or to be ill, to find a suitable cure”. <sup>(38)</sup> World Health Organization has developed various health promotion programs aimed to promote the health of children under-five years and enhance appropriate health-seeking behaviours <sup>(107)(108)(76)</sup>. Furthermore, the Namibian MoHSS has developed various policies, strategies and programs to improve health-seeking behaviour and promote the health of

children under five years<sup>(23)(109)</sup>. However, worldwide, including Namibia, health promotion programs were based on the idea that providing, knowledge about the causes of ill health and choices available, will eventually change individual behaviour. However, according to Mackian<sup>(110)</sup> there is a growing recognition in both developing and developed countries that providing education and knowledge at the individual level is insufficient to promote a behaviour change. Attempts are now being made to incorporate knowledge about health-seeking behaviour into health service delivery strategies in a way sensitive to the community's local dynamics.<sup>(111)</sup> Therefore, understanding health-seeking behaviour in a community is necessary to develop appropriate health policies, health systems and educational strategies to improve health-seeking behaviour. Furthermore, a carefully developed strategy ensures suitable approaches for the circumstances.<sup>(112)</sup>

## **2.9 SUMMARY**

This chapter presents an overview of the literature related to the key concepts and issues this thesis covers. It is divided into five major sections. Section one looks at the epidemiology and factors associated with diarrhoeal disease, clinical types and complications, causes of and management, clinical care for diarrhoea in Namibia, and diarrhoea epidemiology related to the nutritional status of children under five. The second section describes the literature review of essential concepts regarding parents' or caregivers' perceptions of diarrhoeal causes and management. HSB is influenced by peoples' perceptions about the disease within the context of traditional and cultural beliefs and attitudes. People's perceptions about the diseases and cultural classification of illness are noted to determine the course of action regarding health-seeking and when and from where it should be sought. Patients are often reported to select alternative healthcare services through traditional practitioners over public facilities for numerous reasons but more explicitly due to their cultural beliefs about the nature of their service. The third section describes the literature review on parents' or caregivers' knowledge, attitudes, and practices about diarrhoea. Positive experience in prevention, management, and diarrhoeal danger signs is necessary for diarrhoea prevention, home management and appropriate treatment-seeking, and early referral of very sick children. Section four describes studies related to factors associated with HSB. The focus here was to identify and evaluate the

various studies on HSB more precisely, especially for diarrhoeal disease among children under five, particularly from developing countries. Section five presents reflections on reviewed HSB models. Syntheses of how these models interact in explaining the health-seeking related to various diseases are made.

## **CHAPTER 3**

### **RESEARCH DESIGN AND METHODOLOGY**

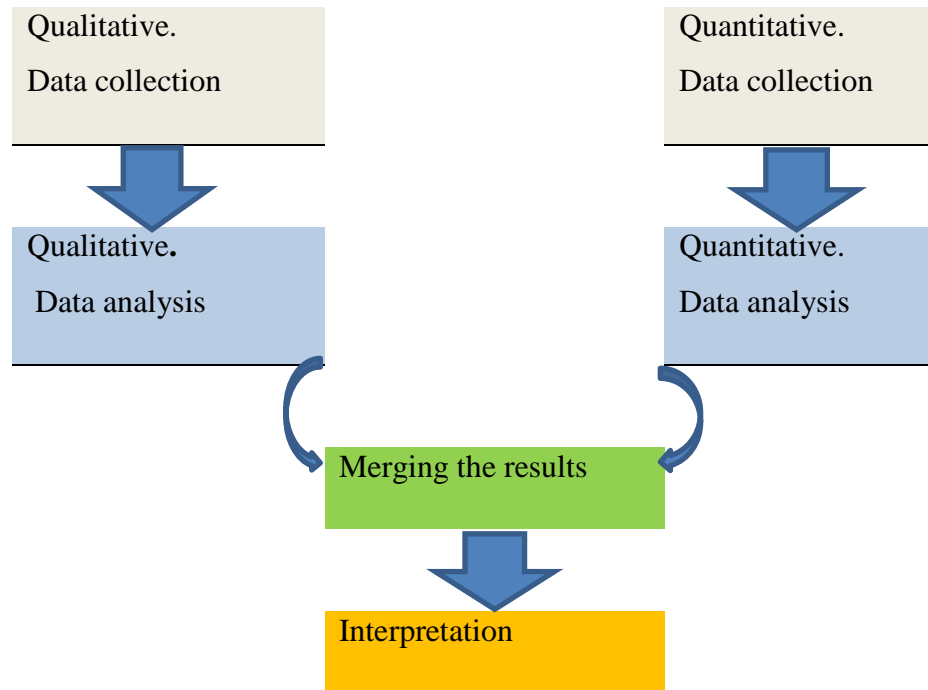
#### **3.1 INTRODUCTION**

This chapter explains the research design and methods used to guide the development of strategies for healthcare providers to enhance appropriate health-seeking behaviour among parents and caregivers of children under five with acute diarrhoea in the Ohangwena Region. The researcher used a structured framework consisting of three phases: the empirical phase, the conceptualization phase, and the strategy development and verification phases. The methods used in each phase are discussed in detail under the research design. Furthermore, the study population, sampling technique, research instrument, and procedures used for data collection are discussed.

#### **3. 2 THE RESEARCH DESIGN**

The research design refers to the plan or concept within which the research is conducted, a blueprint for data collection, measurement, and data analysis.<sup>(113)(104)(1)</sup> The study employed a mixed research design which includes both quantitative and qualitative designs. Both types of data are needed to develop a complete understanding of the phenomenon. Combining quantitative and qualitative methods involves combining statistics, trends and stories about the phenomenon to obtain the best research outcomes.<sup>(114)</sup> Furthermore, this study used a prototype of the major design (mixed method design), a convergent parallel design. According to Morse, cited by Cresswell and Clark<sup>(31)</sup> the purpose of the convergent design is to obtain different but complementary data on the same topic. The researcher used this design to triangulate the methods by comparing and contrasting quantitative statistical results with qualitative findings for corroboration and validation purposes.<sup>(31)</sup> The procedure for implementation of this design included four major steps. First, the researcher collected both qualitative and quantitative in parallel; secondly, the researcher analyzed the two data sets separately and independent from each other, merged the results of the two data sets and then finally, the researcher interpreted to what extent and, in what ways the two sets of results, converge, diverge

from each other, and relate to each other. Finally, the two data sets were combined to have a better understanding response to the study's overall purpose. Furthermore, sub-objective 1a, 1c and 1d used community-based cross-sectional, non-interventional and descriptive design. Furthermore, for sub-objective 1b and 1d exploratory descriptive design was use. (See Figure 7).



*Figure 7: Convergent parallel design*

Additionally, the study comprised of four phases, the design for each phase is as follows:

The findings delivered from the mixed-method will be used to develop strategies for the Ministry of Health and Social Services (MoHSS) to be implemented by health professionals and health extension workers, to facilitate the promotion of appropriate HSB. McKinlay's model, practice-oriented theory, and Howe's Compass-Aligned Performance System guided the development of strategies for health professionals and health extension workers.

### 3.2.1 Theoretical framework

The theoretical framework aims to make research findings more meaningful and consonant with the theoretical constructs in the research field and to ensure generalizability.<sup>(115)</sup> This section presents the theoretical framework employed in the current research: McKinlay's model, practice-oriented theory, and Howe's Compass-Aligned Performance System.

**McKinlay's model (1972):** Researchers in public health, traditionally, are required to describe the theoretical framework for their research, the methods used to collect and interpret data, and the process for analyzing research results.<sup>(115)</sup> In Chapter 2, various models that influence health-seeking behaviour have been described. Moreover, McKinlay's theoretical framework takes a broad approach that shares assumptions developed through other models related to HSB, embracing multi-disciplinary research approaches. Inevitably, for the current research, McKinlay's theoretical framework has provided an overall foundation, from the literature review to formulating research objectives and questions. The framework allowed the researcher to develop methodological approaches to comprehensively explore factors influencing parents' or caregivers' health-seeking with children suffering from diarrhoeal disease. McKinlay's theoretical framework highlights six effective approaches to understanding HSB, such as economic, socio-demographic, geographic, micro-sociological, socio-cultural, and organizational factors.

**Kroeger's framework of HSB:** Several theoretical frameworks related to HSB have been presented in the literature. However, the conceptual framework of Kroeger for assessing HSB integrates most aspects underlying the characteristic HSB of a community, particularly in developing countries.<sup>(104)</sup> This framework uses a mixed methodology to study individual behaviours and the social phenomenon of health-seeking behaviour. The current study adopted Kroeger's framework of HSB using mixed methods to develop methodological approaches facilitating an overall exploration of factors influencing parents' or caregivers' health-seeking.

**Practice theory of Dickoff, James, and Wiedenbach (1968):** This practice theory was adhered to since it proposes variables that were helpful in conceptualization for the

development of strategies. Practice theory suggests a survey list that includes variables such as the context, the agent, the recipient procedures, dynamics, and terminus.<sup>(36)</sup>

### **3.2.2 Mixed method approach**

As indicated above, this study adopted a mixed-methods research approach. According to Creswell and Clark,<sup>(31)</sup> a mixed-methods design includes both qualitative and quantitative design, which implies that data are integrated, related, or mixed at the same stage of the research process. The researcher based the inquiry on the assumption that combining quantitative and qualitative data yields a complete analysis, and the two complement each other. According to Schmidt, 2005, cited in Driscoll et al.,<sup>(116)</sup> a mixed-method design helps the researcher obtain rich information about the phenomenon. In figure 8, the steps followed in conducting a mixed-method study are indicated. Hence, this research study observed the seven steps shown in figure 8, from the planning stage to the data analysis stage.

The findings delivered from the mixed method were used to develop strategies for health professionals and health extension workers to promote appropriate health-seeking behaviours.

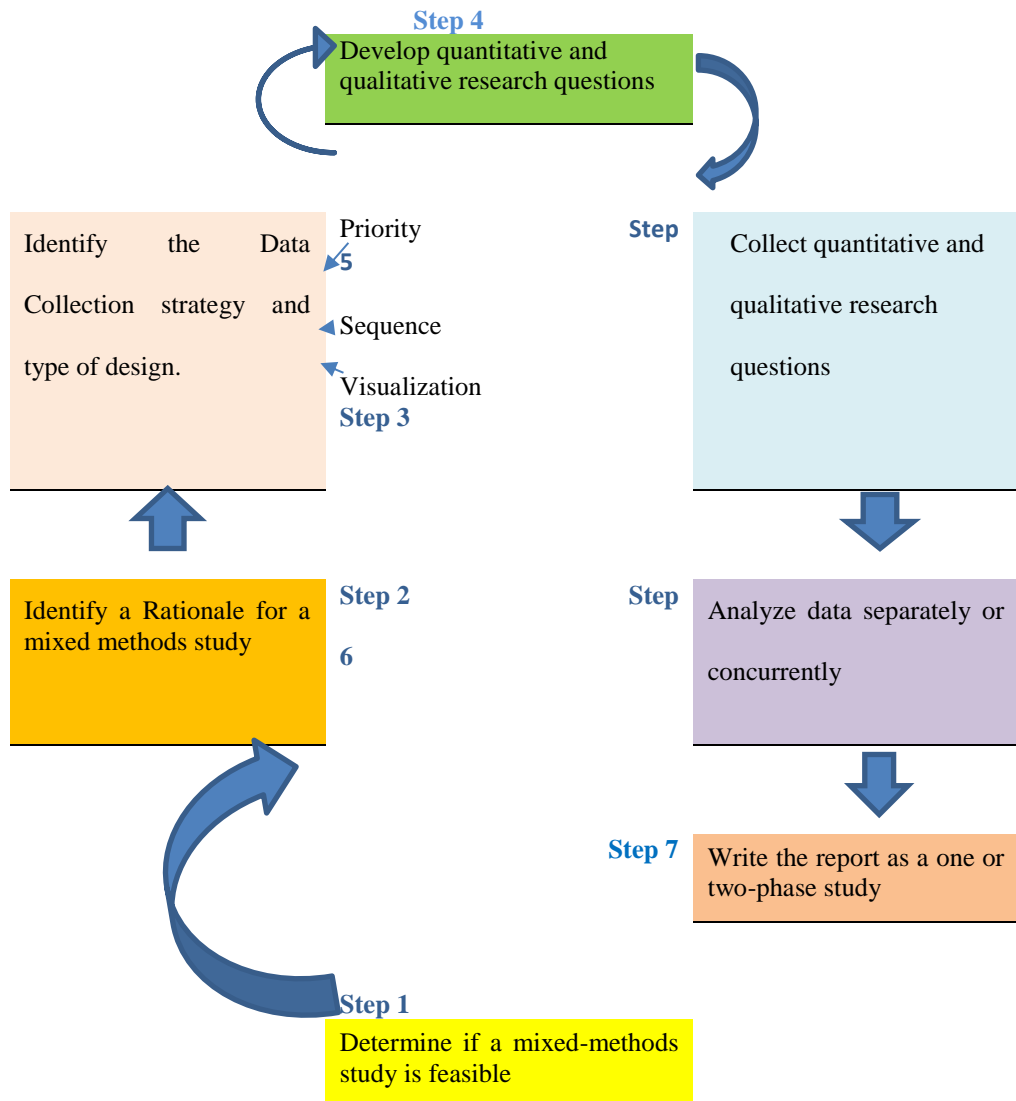


Figure 8: Steps in the process of conducting a mixed-methods study (Adapted from Cannon, 2004)

The study design carried out for phase one situational analysis is described below:

In Phase 1, the researcher used a qualitative design to determine and describe parents' and caregivers' perceptions regarding HSB, explore factors associated with HSB and determine the community perspective towards the causes in children under five of various diseases prevalent in the study area. The quantitative method was used to determine factors associated with health-seeking behaviours, the KAP among parents and caregivers regarding acute diarrhoea, and the phenomena related to health-seeking behaviour, socio-economic, demographic, and reasons for seeking different treatment options. According to Schmidt, 2005, cited in Driscoll et al,<sup>(116)</sup> a mixed-method design helped the researcher to obtain rich information about the phenomenon.

**3.2.2.1 Qualitative design:** Qualitative design involves collecting and analyzing non-numerical data to gather in-depth insight into a problem or generate new ideas.<sup>(117)</sup> A qualitative method is particularly relevant where information is prerequisite directly from those experiencing the phenomenon under investigation, where resources and time are limited, or perhaps as part of a mixed-methods approach.<sup>(33)</sup> In the current study, a qualitative approach was used to explore and determine parents' or caregivers' perspectives on the causes of diarrhoea prevalent in the study area. In addition to the quantitative approach, the qualitative approach has helped the researcher gain more insight and understanding by exploring and determining factors associated with the health-seeking behaviours of caregivers living in the Ohangwena region through FGD, field notes, and interviews to collect detailed views from participants.

**3.2.2.2 Quantitative design:** A quantitative method gathers empirical evidence. Therefore, it is a formal, objective, systematic process for obtaining quantifiable information about a study's variables using formal instruments to collect needed information.<sup>(117)</sup> During this convergent mixed-method study; the researcher used a quantitative approach to determine and describe epidemiology and factors associated with diarrhoea among children under five and to determine the knowledge, attitudes, and practices among parents or caregivers regarding acute diarrhoea and determine and explore factors associated with HSB of caregivers. A survey was conducted whereby questionnaires were used as quantitative data collection instruments to generalize results for a population. Furthermore, the researcher used techniques traditionally used with quantitative.

Hence, the researcher used a descriptive cross-sectional non-interventional approach focusing on the determinants of HSB by parents and caregivers of children under five in the Ohangwena Region. A single cross-sectional design was chosen because the study was conducted at one point in time in a single round of data collection to examine what currently exists.<sup>(117)</sup>

**Descriptive research design:** Descriptive designs focus on how and why questions and present a picture of the specific details of a situation, social setting, or relationship.<sup>(118)</sup> The method is utilized to gain more information about particular characteristics within a

specific field of study. The current study is also descriptive since it was conducted to determine and describe epidemiology and factors contributing to diarrhoea prevalence.

**Cross-sectional design:** With a cross-sectional design, data is collected at one point in time.<sup>(117)</sup> Therefore, this design was chosen because the study was conducted in the present time, and all data were collected during a specific period. Hence, findings and outcomes can be analyzed to create new theories/studies or in-depth research

### **3.2.3 Research methods and techniques**

This study was conducted in three phases: empirical, conceptualization, and strategy development.

#### *3.2.3.1 Phase 1: The empirical phase [Situational analysis]*

In conducting situational analysis, the following four sub-objectives were used:

##### **Objective 1** Conducting situational analysis

- a:** To determine and describe epidemiology and factors associated with diarrhoea among children under five in the Ohangwena region
- b:** To explore and describe parents' or caregivers' perspectives on the causes of diarrhoea prevalent in the study area
- c:** To determine the knowledge, attitude, and practices among parents or caregivers regarding acute diarrhoea in the Ohangwena region
- d:** To determine and explore factors associated with HSB of caregivers living in Engela District in the Ohangwena region

**Sub-objective 1a).** To determine and describe epidemiology and factors associated with diarrhoea among children under-five. A community-based cross-sectional, non-interventional study was carried out, and descriptive statistics were used to determine factors related to HSB.

**Sub-objective 1b).** To explore and determine parents' or caregivers' perspectives on diarrhoea causes in the study area prevalent in the study area. The qualitative research design was deemed suitable for exploring and describing community perspectives related

to causes of diarrhoeal disease among children under five to gain insight into their views which might consequently help improve HSB.

**Sub-objective 1c).** Focused on determining the KAP of parents or caregivers, a quantitative descriptive research design was carried out to measure the caregivers' responses objectively on their knowledge, attitudes, and practices regarding acute diarrhoea to promote appropriate HSB.

**Sub-objective 1d).** Determine and explore factors associated with HSB. The qualitative and quantitative methods were used to help the researcher understand the phenomena under study and quantitatively analyze factors that influence HSB

### *3.2.3.2 Population*

The research population was the total set of individuals or objects with common characteristics.<sup>(117)</sup> The population for each objective is indicated below.

**Sub-objective 1a).** **To determine and describe epidemiology and factors associated with diarrhoea among children under five.**

The population in this study was 7828 children under five from 530 households (HH), whose parents/caregivers consented to participate in the research and who are residing in the study area for one year.

**Inclusion criteria:** The study included households from the Engela district that belonged to the five randomly selected constituencies, parents and caregivers who were residents in the study area for one year or more and households with at least one child under-five years were eligible for the study. Therefore, the study population consisted of a sample of all families with children aged 1-59 months who were randomly selected.

**Exclusion criteria:** Household from the Ohangwena region that does not belong to the Engela district and those that does not belong to the five randomly selected constituencies, Furthermore, households with no children under five, children less than one-month-old, participants who had lived in the area for less than one year, and children whose caregiver was not available at the time of interviews or was under 18 years old.

**Sub-objective 1b). Explore and describe parents' or caregivers' perspectives on the causes of diarrhoea in the study area prevalent in the Engela District in the Ohangwena region.**

The target population was parents and caregivers whose children were admitted at Engela District Hospital suffering from diarrhoea or malnutrition, or those treated at health centres and clinics under study as well as those who went to a traditional healer for treatment, the HEWs, traditional healers and priests. The population size was determined by data saturation. Data saturation occurred when participants reached a stage whereby their experiences became redundant, such that no new information could be gathered by further data collection<sup>(119)</sup>

**Inclusion criteria** were all parents and caregivers, priests, and traditional healers who were residents of the randomly selected constituencies for not less than one year and who were 18 years old and above, and who consented to participate. Kwanyama- or English-speaking parents or caregivers whose children under five were suffering from diarrhoea and admitted to the Engela Hospital pediatric ward, and those who brought their children to health centres and clinics under study and were residents to the Engela district. Furthermore, health workers (nurses, doctors, and HEWs) who were employed by the Ministry of Health and Social Services (MoHSS) working in health facilities in the Engela District for not less than one year participated in the study.

**The exclusion criteria** were health professionals who worked for the MoHSS for less than a year and people from other professions who were not health workers. Priests and traditional healers who were not from villages under study and parents and caregivers whose baby is seriously ill, and those who are non-residents in the area under study. Participants who were under 18 were also excluded. Children who had stayed in the home for less than two weeks and would leave within four days were also excluded.

**Sub-objective 1c). Determine parents' or caregivers' knowledge, attitude, and practices regarding acute diarrhoea in Engela District in the Ohangwena region.**

The population in this study was parents or caregivers from 530 HH with children under the age of five years.

**Inclusion criteria:** The study included households from the Engela district that belonged to the five randomly selected constituencies, parents and caregivers who were residents in the study area for one year or more and households with at least one child under-five years were eligible for the study. Therefore, the study population consisted of parents or caregivers from all families with children aged 1-59 months who were randomly selected

**Exclusion criteria:** Household from the Ohangwena region that does not belong to the Engela district and those that do not belong to the five randomly selected constituencies; furthermore, households with no children under five, children less than one month old, participants who had lived in the area for less than one year, and households where the parent or caregiver was not available at the time of interviews or was under 18 years old.

**Sub-objective 1d). Determine and explore factors associated with HSB of caregivers living in the Ohangwena region,**

The target population was health professionals (five doctors, 62 nurses, and 81 HEWs working in health centers and clinics in the Engela district); parents and caregivers (whose children were admitted to the Engela District Hospital with diarrhoea, and those that were treated at health centres and clinics under study). Furthermore, the population comprised of traditional healers and priests from villages under investigation (the population size for parents or caregivers, traditional healers and priests was determined by data saturation).<sup>(119)</sup> and parents or caregivers from 530 HH with 7828 children under five.

**For the qualitative aspect of the study, inclusion criteria** were all parents and caregivers, priests, and traditional healers who were residents of the randomly selected constituencies for not less than one year and who were 18 years old and above, and who consented to participate. Kwanyama- or English-speaking parents or caregivers whose children under five were suffering from diarrhoea and admitted to the Engela Hospital pediatric ward, and those who brought their children to health centres and clinics under study and were residents to the Engela district. Furthermore, health workers (nurses, doctors, and HEWs) who were employed by the Ministry of Health and Social Services (MoHSS) working in health facilities in the Engela District for not less than one year participated in the study.

**The exclusion criteria** were health professionals who worked for the MoHSS for less than a year and people from other professions who were not health workers. Priests and traditional healers who were not from villages under study and parents and caregivers whose baby is seriously ill, and those who are non-residents in the area under investigation. Participants who were under 18 were also excluded. Children who had stayed in the home for less than two weeks and who would leave within 4 days were also excluded.

**For the quantitative aspect of the study inclusion criteria:** The study included households from the Engela district that belonged to the five randomly selected constituencies, parents and caregivers who were residents in the study area for one year or more and households with at least one child under-five years were eligible for the study. **Exclusion criteria** included household from the Ohangwena region that does not belong to the Engela district and those that does not belong to the five randomly selected constituencies, parents who were residents in the study area for less than a year and household with no under five were excluded.

#### *3.2.3.3 Study samples and sampling techniques for quantitative study*

The multistage cluster sampling method was used, and constituencies were considered as clusters. The sampling was conducted as follows: five constituencies out of seven were randomly selected in the first stage. Then, a simple random sample was carried out by listing all seven constituencies and assigning each constituency with a number between one and seven (1-7). Furthermore, the assigned numbers were written on a piece of paper that was folded and put in a bowl; thereafter, the researcher randomly picked a number from the bowl that formed part of the study. In the second stage, the villages were selected also using the simple random method by assigning random numbers generated from a scientific calculator. In the third stage, the households were selected using a systematic sampling method by choosing an arbitrary starting point using random numbers generated from a scientific calculator and then selecting every 5<sup>th</sup> household in all five constituencies.

Regarding the determination of the sample size of homes which were selected from each constituency, the researcher considered a stratified proportionate sampling method –based on the relative frequencies or percentages of households in each constituency. The researchers purposely included only families with children under five. A household with at least one child under five was eligible for the study. Where a home had more than one child under five, simple random sampling was conducted by assigning each child a number; the assigned numbers were written on a piece of paper that was folded and put in a bowl; after that, the researcher randomly picked a number from the bowl that formed part of the study. Hence, the minimum sample size was 422 HH; however, for the representativeness of the sample and the non-responses, 530 HH were surveyed.

### 3.2.4 The sample frame for households

Conversion of children found for sample size.<sup>(120)</sup>

$$\text{Number of HH} = \frac{N \text{ children}}{\text{HHsize} * \% \text{ under 5yrs} * 0.9} = \text{NHH} = \frac{34791}{0.6 * 0.15 * 0.9} = 7828 \text{HH}$$

Number of HH= sample size in terms of households, N children = sample size in terms of children

HH size= average household size, % of under 5= proportion of under 5years children within the under-five age category, 0.9 = fraction of 0-59 months children within the under-five age category.

The sample size was determined based on the Cochran formula used when the population size was infinite.  $n = z^2 * \frac{p * q}{e^2}$  (21)  $n = \frac{1.96^2 * 0.5 * 0.5}{0.05^2} = 384.16 \text{HH} = 384 \text{HH}$  n=sample size, z= desired confidence level 95%, p=expected prevalence, q= 1-p (expected non-Prevalence) e=relative desired precision. Non-respondent rate of 10% = 38+384= 422HH. Hence, the minimum sample size was 422 HH. However, 530 HH were surveyed.

The researcher was assisted in the data collection and field work by HEWs and third-year student nurses from the University of Namibia (UNAM). Under the researcher's close supervision, the students took part in the data collection process for learning experiences and practical exposure to research activities.

Furthermore, the researcher, student nurses, and the HEWs assigned to the ten health facilities falling under the selected constituencies contacted the households with children

under five with the village headman's assistance. The snowball method (chain referral) was used by asking for further references from the homes visited.<sup>(121)</sup>

### *3.2.3.6 Study samples and sampling techniques for a qualitative study*

Out of five randomly selected constituencies, ten health facilities were selected from the study area using purposive sampling. Three out of five doctors were conveniently selected for health workers' interviews since they were the only ones available on the day the interviews were scheduled. Furthermore, one nurse was purposively selected from each of the ten health facilities randomly selected from the study area. In addition, the researcher identified four priests and five traditional healers with the village headman's assistance, and then snowball sampling (chain referral) was used by asking for further references. Fifty-seven HEWs allocated to five constituencies were all included using total population sampling since they are not in significant numbers. Furthermore, 30 parents or caregivers who attended the health facilities under study were selected using a systematic sampling method by choosing a random starting point and then selecting every 2<sup>nd</sup> parent to participate.

*Table 1: Sampled constituencies and Health Centres in the District*

<b>Constituency</b>	<b>Healthcare facility</b>	<b>Participants</b>	<b>Number</b>
1. Ongenga	Omungwelume Clinic	Doctors	3
	Ongenga Clinic	Nurses	10
2. Oshikango	Edundja Clinic	HEWs	57
	Odibo Health Centre	Priests	4
3. Endola	Endola Clinic	Traditional healers	5
	Ongha Health Centre	Parents or caregivers	30
4. Engela	Engela Hospital		
	Omududu Clinic		
5. Ondobe	Ondobe Clinic		

### **3.3 DATA COLLECTION INSTRUMENT USED IN PHASE 1**

For the qualitative study design (sub-objectives 2 and 4), the researcher conducted in-depth face-to-face interviews with the key informants (three doctors, ten nurses, five traditional healers and four priests). According to Polit and Beck<sup>(122)</sup> key informant is a person who is knowledgeable about the phenomenon of research interest and willing to share information and insights with the researcher. In the current study, the key informant interviews were included since they were regarded as having much information related to the topic under study and are most likely to yield information-rich data about the problems. Furthermore, six focus group discussions with 30 parents or caregivers and 9 with 57 HWES were conducted. A Focus group was considered since the researcher wanted to gather information from a larger group; furthermore, the researcher wanted to determine how help was sought by the parent whose child was admitted or brought to the hospital. In-depth interviews and focus group discussions are helpful tools for learning about people's thoughts, feelings, and experiences. All participants were expected to respond to the following question followed by probing questions: "Tell me your lived experiences concerning the HSB of parents or caregivers whose children are suffering from diarrhoea" (annexure G). Furthermore, all parents/caregivers were asked the following question, followed by probing questions. What are your perceptions of factors contributing to diarrhoea in your area of living/village? (see annexure H). When discussing their child's illness, the caregivers were asked what they did first before taking the child to the hospital/clinic. The researcher used a voice recorder to record the interview throughout the interviews with the consent of the participants.(118) In addition, a pilot study was conducted at the Intermediate Hospital Oshakati that helped the researcher define the primary research questions.

For sub-objectives 1 and 2, a structured questionnaire (see annexure E) comprising four sections, namely:

Section A: Soccio-demographic characteristics of parents/caregivers,

Section B: Household characteristics,

Section C: Aspects related to diarrhoea and health seeking and

Section D: Aspects related to parents' knowledge, attitudes and practice.

Most aspects for section B (house hold characteristics) were adopted from the NDHS 2013; furthermore, the questionnaire was developed based on the literature reviewed and was modified and amended for cultural specificity to suit the current study.<sup>(23)</sup> Before data collection a pilot study was done on 19 households (5% of the sample) before the actual data collection for testing and was modified accordingly. Data collectors were trained separately for three days (student nurses for three days and HEWs for 3 days) before data collection, and the main researcher carried out continuous supervision.

After pilot testing, a linguistic person translated the questionnaire from English to the local language and then translated it back to English after data collection. The HEWs and student nurses were trained separately for two days before data collection to assist with data collection. The researcher, student nurses, and HEWs read the questions to the respondents, filled in the respondent's answers exactly as they were given, and left with the questionnaire when the interview was over.<sup>(123)</sup> The data collection was supervised by the researcher, who checked for the completeness of the collected.

### **3.4 DATA COLLECTION PROCEDURE USED IN PHASE 1**

Data collection commenced as soon as permission to conduct the study was granted from the Ministry of Health and Social Services, University of Namibia Ethical Committee, Regional Director, and the Governor of Ohangwena Region.

**For sub-objectives 2 and 4**, the researcher collected data with unstructured individual face-to-face interviews and semi-structured focus group interviews (see interview guide annexure G, H and I), lasting 30-45min until saturation is reached-data saturation is reached when participants reach a stage whereby no new information can be gathered by further data collection.<sup>(118)</sup> The interviews were conducted in the local language and English for those who were not conversant in the local language. Participants who responded in the local language, their responses were translated into English by a translator. Probing questions were asked depending on the participant's responses so that the researcher could get a piece of in-depth information. In addition, nine focus groups

comprising of five to 11 participants per group were conducted with HEWs from the Engela District. Furthermore, six focus group discussions of five parents or caregivers per group were conducted.

The researcher made use of a voice recorder after consent was obtained from the participants to record the interviews to ensure accurate transcriptions. The date, venue and time of the interview were arranged based on the participants' convenience. In addition, the researcher took field notes to observe what was transpiring on the ground and nonverbal communication, which is important but cannot be tape-recorded.

**For sub-objectives 1, 3, and 4,** The questionnaire comprising of four sections covering all three objectives. The objectives were developed based on a literature review; however, the section containing the household characteristics was adopted from the NDHS<sup>(23)</sup> and other relevant literature related to this study. The questionnaire consisted of four sections. Section: A socio-demographic characteristic of children under five and parents/caregivers, section: B comprised of household characteristics, section: C comprised of aspects related to diarrhoea and malnutrition, and section: D comprised of aspects related to knowledge attitude and practices. The questionnaire was then translated into Oshiwambo by the linguistic person and then translated back to English after data collection. The research team comprised the principal researcher, student nurses, and HEWs. Both student nurses and HEWs were trained to assist in data collection before the actual research process.

The self-report method was used to gather information whereby the researcher, student nurses, and HEWs carried out data collection by moving from household to household with an under-five child. Respondents who were the primary caregivers, who know the child better, be it mother, father, or caregiver (male or female), were requested to provide answers based on the questionnaire's questions. The research team also clarified where necessary and filled in the respondents' answers precisely as they gave. The research team members then left with the questionnaire once the respondent answered all the questions.<sup>(123)</sup> In addition, the data collection process took place from January to March 2019 in Engela District, Ohangwena Region, Namibia.

The questionnaires were divided into section A-D. the sections were divided as follow:  
Section A: Socio-demographic characteristics of parents or caregivers.

Section B: Household characteristics

Section C: Aspects related to diarrhoeal disease

Section D Knowledge, attitude, and practice

### **3.4.1 Reliability and Validity**

For quantitative data, reliability and validity were ensured through the use of a well-designed questionnaire. The same instrument was used throughout the study, enabling the production of the same data. Completed questionnaires were checked daily, and errors were corrected. A questionnaire pre-test was conducted to check on the questionnaire's accuracy so that the answers obtained were true and accurate.<sup>(124)</sup> Furthermore, to test the instrument's validity and reliability, a pilot test was done prior to data collection on 5% of the sample in the constituency that was not part of the study. The assessment of the data collection tool's reliability and validity found a Cronbach's Alpha of 0.810; this shows that the data collection items measured the same concept.<sup>(125)</sup> Furthermore, reliability was ensured by involving the statistician to review the questionnaire for accuracy and consistency; based on the statistician's inputs, the questionnaire was refined. In addition, validity is considered the main criterion used to evaluate an instrument's quality.<sup>(32)</sup> In this study, four types of validity approaches, namely: construct validity, external validity, content validity, and face /theoretical validity, were used to ensure the quality of scores from the instrument and the quality of the conclusion that can be drawn from the results. **Construct validity:** looked at the degree to which inferences can legitimately be made from the theoretical constructs on which the study's operationalization was based. To achieve construct validity, the researcher has ensured that the indicators and measures are carefully developed based on the existing knowledge. Furthermore, the questions included all the relevant indicators of diarrhoea prevalence, knowledge, attitude, practice and health-seeking behaviour. In addition, the questionnaire was reviewed by senior experts, and the statistician and the supervisors ensured a link between the set questions and the objectives. **External validity:** looked to the degree to which inferences can legitimately be made from the study context to other people, places or time. To ensure construct and external validity, the researcher employed a multistage proportionate sampling method to ensure that the sample was representative of the target population. The pilot testing was

conducted before the main study was conducted in the Oshana region. However, the responses were only from the Ohangwena region; therefore, the findings cannot be generalized to the other areas. **Content validity** aimed to warrant that the instrument represents the factors under study; therefore, in the current study, the researcher included a variety of questions in the questionnaire; hence the questions used covered the study's objectives. Furthermore, content validity was ensured by conducting a literature review, and supervisors checked the content of the questionnaire. The researcher used the self-report method for data collection, which ensured the information provided was not tampered with. The study supervisors and a statistician established the **face validity** of the instrument by ensuring that there is a linkage between the objectives and the coverage of the questions in the instrument.

The data collection process was followed daily by the researcher. Furthermore, the researcher checked for completeness.

#### **3.4.2 Measures to ensure trustworthiness**

For qualitative data, the researcher adopted strategies suggested by Lincoln and Guba, as cited by Tuckett.<sup>(126)</sup> to establish the data's trustworthiness. The criteria are credibility, conformability, transferability, and dependability. **Credibility** in qualitative research implies that the findings and interpretations obtained from the data are credible and represent the subject's original views. The current study established credibility through prolonged engagement, persistent observation, and peer debriefing. Prolonged engagement and ongoing observation were applied by spending sufficient time (two months) in data collection to understand the phenomena under study. Peer debriefing was applied by seeking feedback from those regarded as experts on the study's subject and methodology. Triangulation was also used to ensure credibility, whereby the researcher triangulated information from in-depth interviews with key informants with information from focus group discussions with the parents and caretakers. The researcher adhered to strict selection criteria, and only eligible participants were interviewed to ensure credibility.

**Conformability** was applied through an external audit. The researcher sent all field notes, tape-recorded summaries, coded data, themes found, and interpretations made by the

researcher to experts (people with lots of experience in qualitative research methodology) for review. **Transferability** was demonstrated by providing a detailed description of the sample, the context in which the interviews were conducted, and the inclusion criteria; using purposive sampling and triangulation will enable others to decide whether the findings could be transferred to other situations. **Dependability** was ensured by adhering to the research design and data collection method to provide the same results with repeated use with the participants.<sup>(124)</sup>

Furthermore, pre-interviews with selected key participants were conducted to help the researcher focus on areas that might have been unclear before testing the study questions. This granted the researcher an opportunity to uncover some insight into the study's shape that was not apparent previously. This study conducted interviews with two nurses and one doctor working at the Pediatric ward and Pediatric Outpatients at Intermediate Hospital Oshakati (IHO), two priests and two traditional healers from Oshakati town, two parents and caregivers of children admitted to the pediatric ward at IHO.

Furthermore, the researcher carried out one focus group discussion with 6 HEWs. Such a small-scale study was conducted to test the interview guide, collect data, and rectify the identified problems.

### **3.5 DATA ANALYSIS**

**For the qualitative design in Phase 1 (Sub-objectives 1b and 1d)**, collected data were transcribed verbatim, including pauses and uncertainties in the local language, and translated to English by the researcher with a translator's assistance to ensure that information was not lost before starting data analysis. Transcription included field notes and observations. Data analysis started as soon as the recorded interviews were transcribed and translated. For data analysis, the researcher adopted qualitative techniques which are being used to analyse words such as; findings, reading, coding, displaying, reducing and interpreting, as recommended by Botma et al. <sup>(127)</sup>. Moreover, the data was coded; codes were assigned with labels and grouped into themes, and interrelated themes were organized into sub-themes and coded by the researcher. Furthermore, the researcher used Atlas ti software, version 8.4.25, to undertake a well-organized, systematic, effective, and efficient data analysis.<sup>(128)</sup> The text document for analysis was stored in the qualitative

software program that enabled the researcher to block and label text segments with codes so that they could be easily retrieved, and codes were organized into a visual. Themes, quotes, and networks were generated. Networks View Manager (NVM) was of paramount importance since nodes and links were used to retrieve conceptual information. This process helped the researcher graphically depict and explore relationships between the connected nodes and to create categories of concepts. Furthermore, for sub-objective 1b, four themes, 12 sub-themes and 38 codes were identified; for sub-objective 1d, two themes, seven sub-themes and 34 codes were identified.

**For Sub-objective 1:** Epidemiology and factors associated with diarrhoea among children under five. Descriptive statistics were used to summarize the data. Data were presented as frequency distribution tables, consisting of frequencies, percentages, and 95% confidence intervals. Chi-square ( $\chi^2$ ) test was used to test for the statistical relationship between independent and dependent variables (prevalence of diarrhoeal disease). The researcher applied logistic regression analysis to identify significant factors associated with the prevalence of diarrhoeal disease in children under five and to determine the likelihood of factors that impact diarrhoea prevalence. The model containing all the predictors was statistically significant  $\chi^2 (16, N=530) = 58.44, p<0.001$ , this indicates that the distinguished model respondents who reported that the child suffered from diarrhoea and those who did not report the incidence of diarrhoea. We used International Business Machines (IBM) Statistical Package for Social Science (SPSS) software version 25 to perform this analysis. Variables with statistical significance ( $p<0.05$ ) in the bivariate analysis were included in the logistic regression to determine factors associated with the prevalence of diarrhoeal disease.

**For Sub-objective c:** Knowledge attitude and practice, knowledge was quantified as adequate/inadequate, attitudes as positive/negative, and practice as good, moderate or poor practice.

The knowledge levels were determined using a series of 50 True and False and don't know questions. The overall score was calculated for all 50 knowledge questions for each person. Correct answers scored 1 point, and wrong answers 0. The grading for knowledge was done as follows; 0-59% was regarded as inadequate, while  $\geq 60$  was considered adequate knowledge.

Attitudes analysis was quantified as positive/negative. The attitude significant variables included perceptions about causes of diarrhoea (6 points), treatment of diarrhoea (4 points), and prevention of diarrhoea (5 points). Attitudes regarding diarrhoeal disease were assessed using statements on 5 points out of 15 Likert scales: Strongly agree; agree; neither agree nor disagree; disagree; strongly disagree. Correct answers scored 1 point and wrong answers 0. Each participant who scored 70% and above was classified as having a positive attitude, and those who scored below 70% were classified as having a negative attitude.

The practice was quantified as good, moderate, or poor practice. Good practice was labelled when respondents scored  $\geq 75\%$ , moderate practice when respondents scored 50-74%, and poor practice when they scored 0-49%. There were 30 yes or no questions on practice, and the completed questionnaire was coded on a prepared coding sheet by the principal investigator to minimize errors.

Data were checked for completeness before data entry for knowledge, attitude, and practice. International Business Machines (IBM) Statistical Package for Social Science (SPSS) software Version 24 was used for data analysis. In this study, the outcome variable was the parents' or caregivers' knowledge, attitudes and practices concerning the diarrhoeal disease. Descriptive and inferential statistics were used to summarize the study results. Descriptive statistics were used to summarize the data presented as frequency distribution tables, consisting of frequencies, percentages, and 95% confidence intervals. The statistical relationship between socio-demographic characteristics and knowledge, attitudes and practice was done by using a chi-square ( $\chi^2$ ) test. A p-value equal to or less than 0.05 was considered statistically significant. The knowledge, attitudes, and practice levels were related to socio-demographic characteristics and analyzed at a bivariate level. Also, binary logistic regression was used to determine factors' association with knowledge, attitude and practice.

**Sub-objective 4:** Factors associated with HSB. Qualitative and quantitative data analyses were conducted. For qualitative data analysis, Atlas ti software Version 8.4.25 was used to undertake well-organized, systematic, effective, and efficient data analysis.<sup>(128)</sup> Themes, quotes, and networks were generated. Networks View Manager (NVM) was of

paramount importance since nodes and links were used to retrieve conceptual information. The researcher performed direct logistic regression for quantitative data to assess factors influencing HSB.

### **3.6 MERGING OF THE FINDINGS**

After analyzing the qualitative and quantitative strands of data separately, the researcher used an interactive strategy of merging by explicitly bringing the two sets of results together for triangulation purposes by directly comparing and contrasting qualitative results with quantitative results findings. The comparisons can be seen in the discussion sections of mixed methods results in Chapter 4. Figure 9 below presents the stages of implementing the mixed-method approach, including the point where the two databases were merged in triangulation.

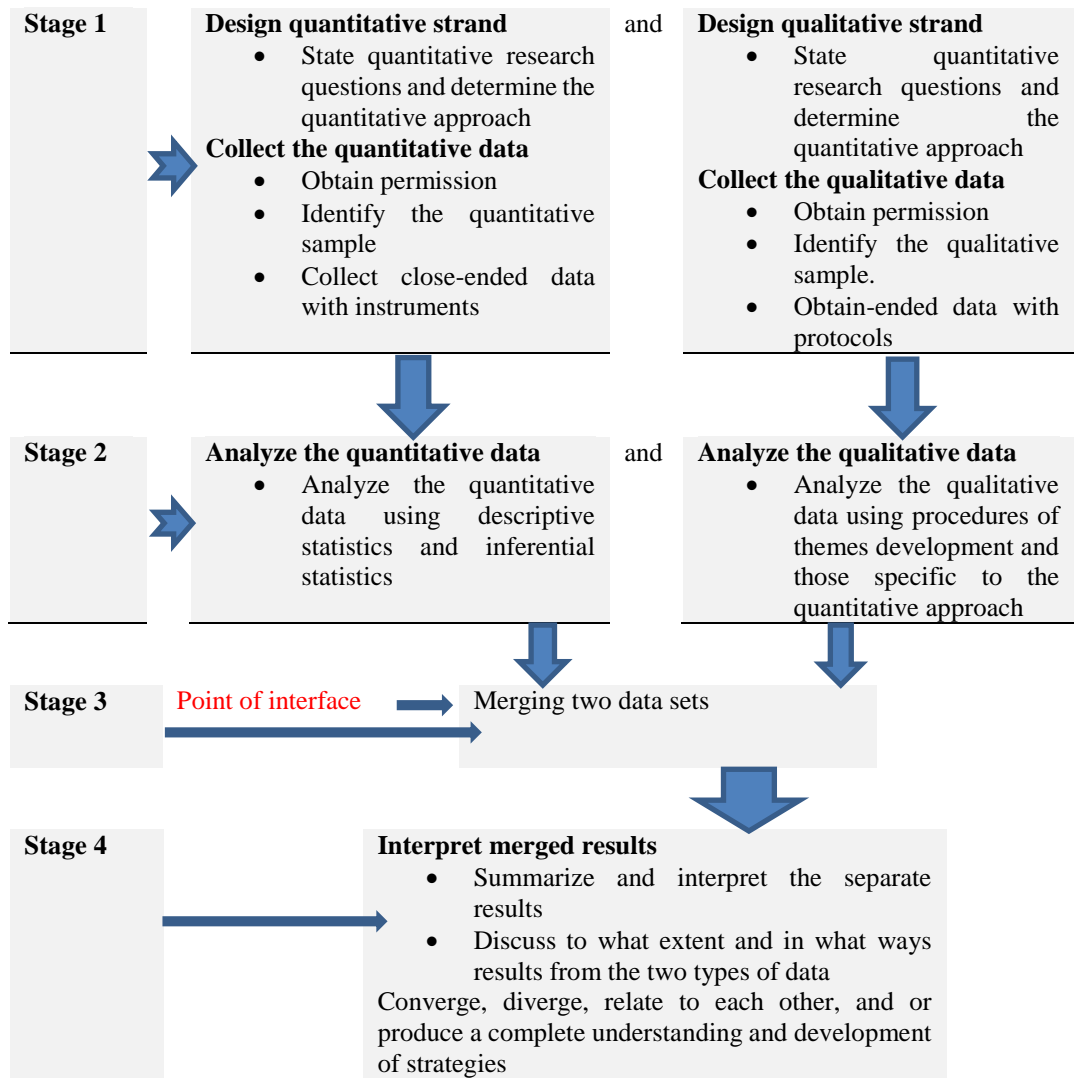


Figure 9: Flow chart for implementing the convergent mixed method design as adapted from Creswell and Plano Clark (2011).

### **3.7 PHASE 2: Development of a conceptual framework to develop strategies for health professionals and extension health workers to improve HSB.**

The objective for this phase was to develop a conceptual framework. Findings from Phase 1 were conceptualized to develop strategies for health professionals and HEWs to facilitate appropriate HSB. The practice theory, according to Dickoff, James Wiedenbach,<sup>(36)</sup> was utilized, comprising six elements, namely: agent (researcher), recipient (health professionals, extension health workers, priests, traditional healers and parents and caregivers), context (Ohangwena Region) dynamics (challenges hampering successful implementation of the programme), procedures and end product (terminus) which are strategies for health professionals and clients to facilitate appropriate HSB. The conceptual framework is described in Chapter 6.

### **3.8 PHASE 3: Developing and verifying strategies for health professionals and extension health workers to promote appropriate HSB.**

This phase's objective was to develop and verify strategies to strengthen the appropriate health-seeking in the Ohangwena region. The description phase was presented in chapter 6; furthermore, the strategy designed during this phase is presented in Chapter 7, together with verification of the strategies. In the development of strategies for health professionals, and HEWs employed by MoHSS, to promote appropriate HSB, the researcher used Howe's Compass Aligned performance.

### **3.9 ETHICAL CONSIDERATIONS**

When conducting research, the researcher must observe research ethics which are the norm and standard behaviour. In response to human rights, the researcher has adopted ethical principles articulated by Belmont report<sup>(124)</sup> and the general principles of the Helsinki Declaration.<sup>(129)</sup> Therefore, the researcher adhered to all the ethical principles to ensure that the study does not contradict the requirements of the MoHSS or any respondent's rights. The following principles were adhered to:

### **3.9.1 Permission to conduct the study**

The researcher sought permission to conduct research from the University of Namibia's (UNAM) Postgraduate Committee, the Ministry of Health and Social Services (MoHSS), and the Health Director of the Ohangwena Region.

### **3.9.2 Informed consent**

Informed consent was obtained from participants after giving them accurate and complete information regarding the study's purpose, responsibilities, and the benefits and risks of the research. Ethical considerations were adopted based on the general principles of the Helsinki Declaration.<sup>(129)</sup>

The following three ethical principles were considered throughout the study:

#### **3.9.3 Beneficence and non-maleficence.**

Beneficence enforces the researcher to minimize harm and maximize benefits by ensuring the participants' right to freedom from harm and discomfort and the right to protection from exploitation<sup>(124)</sup>. In this study, the researcher aimed to produce results that would benefit the participants and the entire public. The researcher avoided potential harm and discomfort by using a private room when conducting interviews.<sup>(118)</sup> Participants were informed about their right not to answer questions they are uncomfortable with. Participants were also requested to consent to participate in the study and allow their interviews to be recorded. Furthermore, participants are assured that their participation or information they provided will not be used against them, and the provided data will be anonymous therefore it will not be linked to the participants

#### **3.9.4 Principle of justice**

According to Polit and Beck (2018) principle of justice includes participants' right to fair treatment and their right to privacy.<sup>(124)</sup> In the current study, participants were treated similarly and were fairly selected based on the problem under study and the inclusion criteria. Furthermore, participants were guaranteed that their information would be treated

with strict confidentiality and not linked to other participants. Data was captured on a personal computer that requires a password.<sup>(124)</sup>

### **3.9.5 Respect for human dignity**

Respect for human dignity requires the researcher to ensure participants' rights to self-determination and the right to full disclosure. In the current study, the researcher has fully described the study, the person's right to refuse participation and the potential risks and benefits involved<sup>(124)</sup>.

The purpose, objectives, and process of the study were fully explained to the participants to make an informed decision. Participation was voluntary, and participants were told they could withdraw at any time from the study if they wished, without any consequences, nor would permission be required for withdrawal. The researcher provided information in the language understood by the participants, and participants were given a chance to ask questions for clarity before signing the consent.<sup>(25)(23)</sup>

### **3.10 SUMMARY**

This chapter presented the research methodology, which includes the research design, method, and study population. Furthermore, the chapter presented the data collection procedures, data analysis, and ethical principles. The next chapter will present the study findings and discussions.

## **CHAPTER 4**

### **PRESENTATION OF RESULTS AND DISCUSSION**

#### **4.1 INTRODUCTION**

This chapter focuses on the results obtained from the study; results were analyzed and reported with consideration of the research objectives. Similarly, the chapter describes the methods used for data analysis of the study findings. Moreover, the development of strategies to enhance appropriate health-seeking behaviours among parents/caregivers of children under five in the Ohangwena region was guided by central concepts and statements identified during the discussion of the findings. The mixed-method was used by employing quantitative and qualitative approaches to data collection with their underlying philosophy of post-positivism paradigm and interpretivism, respectively. A cross-sectional, non-interventional study was conducted using a structured questionnaire administered through face-to-face interviews based on the quantitative research approach. Furthermore, the findings were derived from four objectives, namely: Determine and describe epidemiological measures and factors associated with diarrhoea among children under five of age, Explore and describe parents/caregivers' perceptions related to factors contributing to diarrhoea among children under five years of age, determine the knowledge, attitudes and practices among parents'/caregivers' regarding diarrhoeal disease among children under-five; and to determine and explore factors associated with health-seeking behaviours of caregivers living in Engela District. For the first, third and fourth objectives, the researcher used a quantitative method to derive findings, and descriptive and inferential results are presented in tables, figures, and graphs.

The research approach of the qualitative study involved focus group discussions with the parents or caregivers and HEWs, as well as interviews with doctors, nurses, priests, and traditional healers.

The qualitative results are presented as verbatim quotes written in italics. Additionally, quantitative and qualitative data analysis results are merged using a side-by-side comparison approach. The quantitative results are reported first, followed by qualitative findings that confirm or refute the statistical results.

#### **4.2. DISCUSSION OF QUANTITATIVE RESULTS FROM OBJECTIVE 1a: DETERMINE AND DESCRIBE EPIDEMIOLOGY AND FACTORS ASSOCIATED WITH DIARRHOEA AMONG CHILDREN UNDER FIVE IN ENGELA DISTRICT IN THE OHANGWENA REGION, NAMIBIA**

Diarrhoeal disease is ranked the second most common cause of death among children under five, leading to an estimated 1.87 million deaths globally.<sup>(3)</sup> Diarrhoea remains a major public health problem in developing countries, and the majority of deaths due to diarrhoea occur in Africa and South Asia.<sup>(3,7)</sup> In spite of declining mortality from diarrhoea in under-fives in many part of the world, in sub-Saharan Africa, morbidity from the diarrhoeal disease remains high due to inadequate water, poor sanitation/hygiene, insufficient breastfeeding, and malnutrition.<sup>(8)</sup> Children under five are the most vulnerable to diarrhoeal disease, especially during the first two years of life.<sup>(9)</sup> Various studies have indicated that the epidemiologic factors contributing to diarrhoea occurrence are complex.<sup>(48,49)</sup>

Nevertheless, factors such as residential area, unemployment, household income, mother/caregiver age, number of people per household, access to information, type of toilet facilities, access to safe drinking water, child immunization status, nutritional status, caregiver age, number of sleeping rooms are some of the reported contributing to diarrhoeal prevalence.<sup>(9,50-52)</sup> According to a study conducted in Mbour Senegal by Thiam et al.,<sup>(8)</sup> factors such as unemployment of parents, use of shared toilets and no treatment of stored drinking water were found to be significantly associated to diarrhoeal prevalence. Equally, according to a cross-sectional study conducted in Eastern Ethiopia, major risk factors for diarrhoea were improper refuse disposal practices, lack of hand washing facilities, living in a rural area, presence of two or more siblings in a household, and being under five years of age.<sup>(9)</sup> Based on a study conducted in Bangladesh on the

prevalence and health-seeking behaviours for diarrhoeal disease, several factors such as child age, age-specific to height, age and occupation of the parents, residential area, and type of toilet facilities were found to be significantly associated with the prevalence of diarrhoea predicted directly by crude ORS.<sup>(6)</sup> It has been reported that several countries have successfully used mass media, especially radio and television, to bring regular messages on breastfeeding and advocacy for policy support for CDD programmes.<sup>(6)</sup> The possibility of reducing morbidity and mortality related to diarrhoea requires well-informed parents. Vaccine-preventable pathogens cause some cases of diarrhoea; therefore, children's immunization plays a vital role in preventing diarrhoea.<sup>(2)</sup>

In Namibia, especially in the Ohangwena region, the diarrhoeal disease affects 19% of children under five.<sup>(23)</sup> According to the Ohangwena Health Directorate Annual Report of 2016/2017, more than 22,000 children under five were diagnosed with diarrhoea, of which 11,507 (52%) were from Engela Health District, where the current study took place. Similarly, it is estimated that 62.3% of the population in the Ohangwena region lives in the Engela district. Massive population increase in the district resulted in the spread of informal settlements and a lack of essential services such as water provision, solid waste removal, and lack of toilet facilities. Such living conditions are reported to create a high risk for water-borne and gastrointestinal diseases, including diarrhoeal diseases.<sup>(8)</sup>

Despite the high prevalence of diarrhoea in Namibia, there are limited reports from population-based studies. Moreover, data are needed to understand better the factors associated with the prevalence of diarrhoea in this setting. Such data will be valuable for planning, designing, and implementing interventions and prevention strategies to decrease morbidity due to diarrhoea at the community level. Thus, this study aimed to assess the epidemiology of diarrhoea and associated factors among children <5 years old.

#### **4.2.1. Methods**

##### ***4.2.1.1 Study design and study site***

A community-based cross-sectional, non-interventional study was carried out in the Engela District in Ohangwena Region between January 2019 and March 2019. The study site is approximately 738 kilometres from Windhoek, the capital city of Namibia.

Ohangwena region is situated in the northern part of the country, sharing borders with the Cunene province and part of Cuando Cubango province in the southern part of Angola.<sup>(20)</sup> Out of the eleven constituencies in the Ohangwena, seven (Ongenga, Endola, Ondobe, Oshikango, Omulondo, Engela, and Ohangwena) falls under Engela Health District, where the current study took place. Nevertheless, 62.3% of the Ohangwena Region population resides in the Engela District.<sup>(20)</sup> The majority of the people, 89.9%, live in rural areas compared to 10.1% living in urban areas. The district's health services delivery is provided by one regional hospital, two health centres, and 18 clinics and outreach services posts.

The predominant activities in the region are keeping cattle, as well as small-scale agricultural land. However, this region is prone to natural disasters such as drought and floods, which predisposes the residents to famine and waterborne diseases.

#### *4.2.1.2 Study population and sampling techniques*

The population in this study was all the households 7828 with children under five, whose parents/caregivers consented to participate in the research and who resided in the area for one year. The multistage cluster sampling method was used and considered the constituencies as clusters. The sampling was conducted as follows: 5 constituencies out of 7 were randomly selected in the first stage by listing all the seven constituencies and assigning each constituency with a number (1-7). Furthermore, the assigned numbers were written on a piece of paper that was folded and put in a bowl. Thereafter, the researcher randomly picked a number from the bowl that formed part of the study. In the second stage, the villages were selected also using the simple random method by assigning random numbers generated from a scientific calculator. In the third stage, the households were selected using a systematic sampling method by choosing a random starting point using random numbers generated from a scientific calculator and then selecting every 5<sup>th</sup> household in all five constituencies. The sampling of households selected from each constituency is considered a stratified proportionate sampling. The researchers purposively included only households with children under five. Families with at least one child under five were eligible for the study. In households with more than one under five, simple random sampling was conducted to select the child who took part in the survey by

assigning each child a number. The given numbers were written on a piece of paper that was folded and put in a bowl; thereafter, the researcher randomly picked a number from the bowl that formed part of the study. The researcher, student nurses, and HEWs identified the households with children under five with the assistance of the village headman. Then the snowball method (chain referral) was used by asking for further references from houses visited.<sup>(121)</sup>

#### *4.2.1.3 Sample size*

The sample size in this study was determined by using the Cochran formula<sup>(130)</sup>, used when the population size is infinite  $n = z^2 \frac{p \cdot q}{e^2}$ . The following assumptions were considered: n=sample size, z= desired confidence level 95%, p=expected prevalence, q= 1-p (expected non-Prevalence) e=relative desired precision.  $n = \frac{1.96^2 \cdot 0.5 \cdot 0.5}{0.05^2} = 384.16$   
=384

Non-respondent rate of 10% = 38+384= minimum 422. Nonetheless, we surveyed 530 households, totalling 1004 children under five.

#### *4.2.1.4 Data collection method*

A structured questionnaire was developed based on the literature review; however, the questions were modified and amended for cultural specificity to suit the current study. Furthermore, aspects related to household characteristics were adopted from the NDHS 2013 and were used for data collection.

#### *4.2.1.5 Measurements of the variables*

The primary outcome variable was the occurrence of diarrhoea within the two weeks before the data collection.

The dependent variable for this study, "childhood diarrhoeal disease," was defined as the passage of three or more loose or liquid stools in 24 hours.<sup>(16,42)</sup> The prevalence of diarrhoea was calculated by dividing the number of children <sup>(126)</sup> who had an episode of diarrhoea within the two weeks before the data collection as a numerator by the overall number of 530 children.

The independent variables included socio-economic (residence, under-five age, child sex, immunization status, nutritional status, parent/caregiver's age, educational status,

educational level, employment status, household income, number of people per household, and number of sleeping rooms), access to information (ownership of TV, ownership of radio), environmental (source of drinking water, distance from water source the type of toilets, sharing of toilets, ownership of refrigerator, materials of a floor, materials of walls, materials of a roof).

This study considered water sources as water coming from water pipes, protected springs or wells, and improved sources <sup>(9)</sup>. Improved sources include a piped source within the building, yard or plot, a public tap, boreholes and hand-pumped/protected well or protected springs and rainwater or bottled water.<sup>(23)</sup>.

#### *4.2.1.6 Data Analysis*

Descriptive statistics were used to summarize the data. Data were presented as frequency distribution tables consisting of frequencies, percentages, and 95% confidence intervals. Chi-square ( $\chi^2$ ) test was used to test for the statistical relationship between independent and dependent variables (prevalence of diarrhoeal disease). The researcher applied logistic regression analysis to identify significant factors associated with the prevalence of diarrhoeal disease in under-five children and determine the likelihood of factors impacting the prevalence of diarrhoea. The model containing all the predictors was statistically significant  $\chi^2$  (16, N=530) = 58.44,  $p < 0.001$ ; this indicates that the model could distinguish between respondents who reported that a child suffered from diarrhoea and those who did not report an incidence of diarrhoea. We used International Business Machines (IBM) Statistical Package for Social Science (SPSS) software version 25 to perform this analysis. Variables with statistical significance ( $p < 0.05$ ) in the bivariate analysis were included in the logistic regression to determine factors associated with the prevalence of diarrhoeal disease.

### **4.2.2 Results**

#### *4.2.2.1 Socio-demographic characteristics of the respondents*

A total of 530 children under five from 530 households were included in the study, with a 100% response rate. The socio-demographic characteristics of the respondents are presented in table 2. Of the respondents, 79.8% were from rural areas, while only 1% was an urban area. Of most parents/caregivers, 29.4% were aged between 18 and 29. The

median age of the respondents was 38 years. The majority, 74.9%, of the parents/caregivers were unemployed. Almost half of the parents/caregivers had only primary education, 46.4%. The results show a majority of 93.2% of household income ranged between N\$190 – 2000 per month. Equally, the children who suffered from diarrhoea, 23.9%, were from households with the lowest income of N\$190-2000. Nonetheless, the observed association between the levels of income and the occurrence of diarrhoea was not significant. The mean household size was 8.9 (standard deviation (SD): 5.3) individuals. Additionally, results show that houses were overcrowded, with 52.1% of households having 5-10 occupants, 25.8% having 10-20 occupants, and 3.0% having more than 20 occupants. There was a statistically significant association between the prevalence of diarrhoea and the number of occupants in the households ( $p < 0.05$ ).

*Table 2: Distribution of socio-demographic characteristics of the children under five and parents/caregivers related to prevalence of acute diarrhoea*

Variable	Suffered from diarrhoea in past two weeks		Total n (%)	95% C.I of the prevalence of diarrhoea	p-value*
	Yes n (%)	No n (%)			
<b>Residential area</b>					
Urban	0 (0%)	5 (100.0%)	5 (1.0%)	[00.00; 00.00]	0.001*
Informal settlement	49 (48.0%)	53 (52.0%)	102 (19.2%)	[43.75; 52.25]	
Rural areas	77 (18.2%)	346 (81.8%)	423 (79.8)	[14.92; 21.48]	
<b>Mother/caregiver's age group</b>					
18 - 30	39 (25.0%)	111 (75.0)	156 (29.4%)	[21.31; 28.69]	0.001*
31 - 40	47 (33.6%)	93 (66.4)	140 (23.0%)	[29.58; 37.62]	
41 - 50	29 (23.2%)	96 (76.9%)	125 (23.8%)	[19.61; 26.79]	
51 - 60	7 (11.1%)	56 (88.9%)	63 (11.9%)	[08.43; 13.77]	
≥ 60	4 (8.7%)	42 (91.3)	46 (8.7%)	[06.30; 11.10]	
<b>Employment status of mother/caregiver</b>					
Unemployed	103 (26.0%)	293 (74.0%)	396 (74.9%)	[22.27; 29.73]	0.107
Employed	10 (27.7%)	34 (77.3%)	44 (8.3%)	[23.89; 31.51]	
Self-employed	8 (19.0%)	34 (81.0%)	42 (7.9%)	[15.66; 22.34]	
Famer	5 (10.6%)	42 (89.4%)	47 (8.9%)	[07.98; 13.22]	
<b>Mother/caregiver education level</b>					

Not educated	24 (28.2%)	61 (71.8%)	85 (16.0%)	[24.37; 32.03]	0.658
Primary education	58 (23.6%)	188 (76.4%)	24 (46.4%)	[19.98; 27.22]	
Secondary education	41 (21.7%)	148 (78.3%)	189 (27.9%)	[18.19; 25.21]	
Higher education	3 (30.0%)	7 (70.0%)	10 (19.0%)	[26.10; 33.90]	
<b>Average monthly income per house hold</b>					0.281
190-2000N\$	118 (23.9%)	376 (76.1%)	494 (93.2%)	[20.27; 27.53]	
>2000-5000N\$	8 (30.8%)	18 (62.2%)	26 (4.9%)	[26.87; 34.73]	
>5000-10000N\$	0 (0%)	5 (100%)	5 (0.9%)	[00.00; 00.00]	
>10000N\$	0 (0%)	5 (100%)	5 (0.9%)	[00.00; 00.00]	
<b>Number of people per household</b>					0.029*
-4	35 (34.7%)	66 (65.3%)	101 (19.1%)	[30.65; 38.75]	
5-10	61 (22.1%)	215 (77.9%)	276 (52.1%)	[18.57; 25.63]	
11-20	28 (20.4 %)	109 (79.6)	137 (25.8%)	[16.97; 23.83]	
>20	2 (12.5%)	14 (87.5%)	16 (3.0%)	[09.68; 15.32]	
<b>Age of children under five</b>					0.001*
Child's age (in months)	23.67				
Mean age (mean $\pm$ SD, years)	$\pm 15.11$				
0-11	35 (33.2)	77 (68.8)	112 (21.0)	[29.19;	
12-23	44 (31.9)	94 (68.1)	138 (26.1)	37.21]	
24-35	23 (21.9)	82 (78.1)	105 (19.8)	[27.93;	
36-47	8 (8.2)	89 (91.8)	97 (18.3)	35.87]	
48-59	16 (20.5)	62 (79.5)	78 (14.7)	[18.38;	
				25.42]	
				[05.86;	
				10.54]	
				[17.06;	
				23.94]	
<b>Sex of children</b>					0.944
Male	56 (23.6)	181 (76.4)	237 (44.7)	[19.98;	
Female	70 (23.9)	223 (76,1)	293 (55.3)	27.22]	
				[20.27;	
				27.53]	
<b>Immunization status</b>					0.029*
Up-to-date	101 (22.1)	355 (77.9)	456 (86.0)	[18.57;	
Not up to date	25 (33.8)	49 (66.2)	74 (14.0)	25.63]	
				[29.77;	
				37.83]	
<b>Weight for age</b>					0.010*
Normal weight	30 (17.0)	146 (83.0)	176 (33.2)	[13.80;	
Underweight	96 (27.1)	258 (63.9)	354 (66.8)	20.20]	
				[23.32;	
				30.88]	

<b>Total</b>	<b>126 (23.8%)</b>	<b>404 (76.2%)</b>	<b>530 (100%)</b>
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\*p-value Pearson chi-square statistically significant 0.05

#### 4.2.2.2 Hygiene and access to water

As presented in table 3, more than half, 55.3%, of the respondents indicated having tap water at home, followed by 17% who indicated that they buy drinking water from neighbours who have tap water at home; other sources of drinking water 13.6% and dug wells 12.6%. Equally, 86% said it takes them <15min to reach the water source. However, these variables were not significantly associated with the occurrence of diarrhoea. Equally, the results were in contradiction with the responses of key-informants who indicated that water availability is a challenge in the district. *“Our challenges are water scarcity, and people use dirty water.”* P2: HEW-FGR6; P1: Nurse-KI.

The majority of the respondents, 75%, indicated that they boiled the water before drinking, and 64.8% used chlorination. However, 64.9% indicated that sometimes they do nothing to the water. In most households, 73.9% did have toilet facilities at home. Among households with toilet facilities, 19.2% had improved toilets, and 22.9% shared toilet facilities.

#### 4.2.2.3 Prevalence of diarrhoea among children under the age of five years

Prevalence of diarrhoea among under-fives was estimated by dividing the number of children who reportedly had diarrhoea during the two weeks preceding the survey as a numerator by the overall number of children in the sample as a denominator, giving an overall prevalence of 23.8% with children from informal settlement having the highest figure of 48%. Children who were residents from informal settlements 48.0% (95% confidence interval (CI) of 43.75; 52.25;  $p \leq 0.001$ ) had a higher odds of developing diarrhoea in the two weeks preceding data collection as compared to those who were from other settlements the observed difference was statistically significant. The findings are consistent with key-informants interviews participants indicated that diarrhoea is more prevalent among under-fives from informal settlements. *“We have a lot of informal settlements, and most kids that come with diarrhoea are from the informal settlement.”* P3: Doctor-KI

Prevalence of diarrhoea was higher among parents/caregivers aged 31-40, 37.6% (95% CI of 29.58; 37.62;  $p \leq 0.001$ ); the observed difference was statistically significant. The under-five ages ranged from 0-59 months, with a mean age of 23.67 months and a standard deviation of 15.11 months. To allow comparison between different age groups, the under-five age group was categorized into groups of <12 months, 12-23 months, 24-35 months, 36-47 months, and 48-59 months. Analysis stratified by age group shows a high prevalence of diarrhoea among children aged between 0-12 months, 33.2%, and the lowest prevalence was between 36-47 months, 8.2%. The observed difference was statistically significant. More than half of the children were females, 55.3% compared to 44.7% male. Prevalence was slightly higher among females, 23.9%, compared to male children and 23.6%; however, the difference was not statistically significant. Most children (86.0%) had received all the required vaccines; nonetheless, 14.0% of children's immunizations were not up-to-date. For children who had not received all their immunizations, 33.8% (95% CI of 29.77; 37.83;  $p \leq 0.03$ ) had more odds of developing diarrhoea than the 22.1% who did not develop diarrhoea, and the results were statistically significant.

A large number of children, 66.9%, were underweight in the two weeks before the survey. The odds of diarrhoea prevalence increased in children who were underweight as compared to those with a normal weight 27.1% (OR=2.05, 95% CI [1.24; 3.39],  $p \leq 0.01$ ). There was a significant relation seen between diarrhoea and nutritional status. This indicated that underweight children were two times more likely to develop diarrhoea than those with normal nutritional status.

#### *4.2.2.4 Epidemiology of diarrhoea by types*

Types of diarrhoea were classified as acute diarrhoea (that lasted less than 5- 7 days), persistent diarrhoea (lasting more than seven days but less than 14 days), chronic diarrhoea (lasting more than 14 days), and dysentery (when there is blood in stools). Thus, children suffering from diarrhoea were classified as having acute diarrhoea 74%, persistent diarrhoea 9%, dysentery 13%, and chronic diarrhoea 4% (Figure 10).

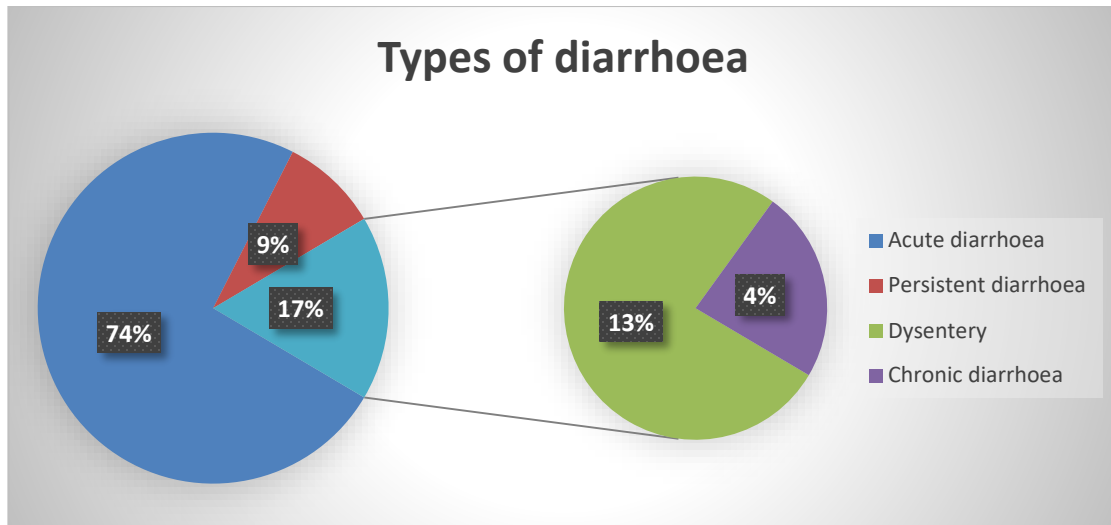


Figure 10 Types of diarrhoea

Parents/caregivers report children having shown the following symptoms: fever 48%, sunken eyes 45%, child being thirsty 39%, unable to eat or drink 30%, vomiting 24%, and having blood in stool 13% (Figure 11).

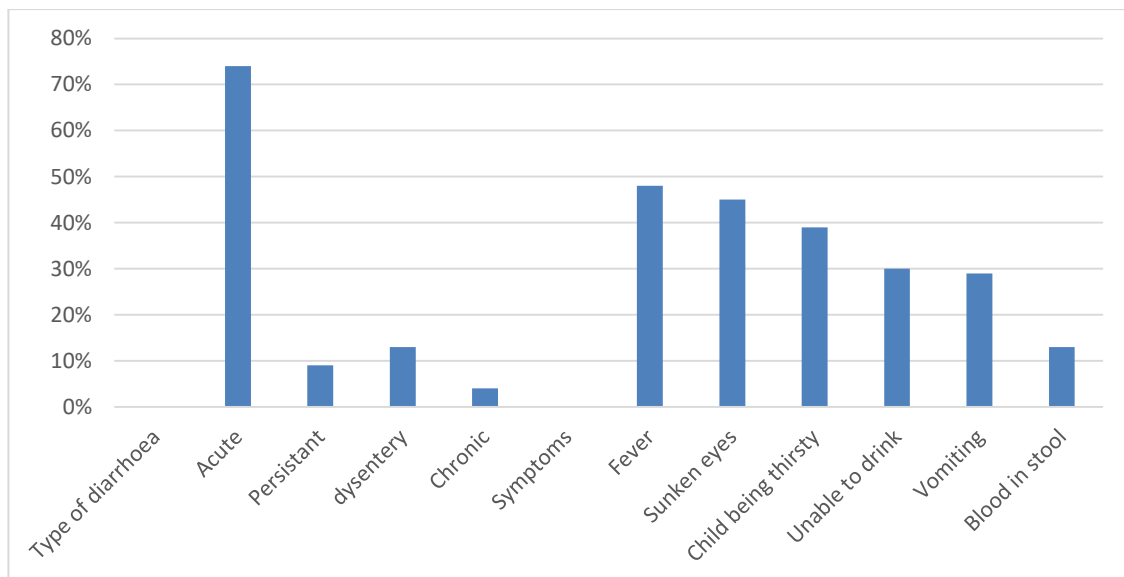


Figure 11 Proportions of types of diarrhoea and accompanying symptoms

#### 4.2.2.5 Epidemiology of childhood diarrhoea by nature of household

Table 3 highlights the environmental characteristics of households related to the occurrence of diarrhoea among under five-year children. Regarding the number of sleeping rooms per household, 39% of respondents indicated having four or more sleeping

rooms. The number of sleeping rooms was significantly associated with the prevalence of diarrhoea ( $p < 0.05$ ). The majority of respondents indicated having access to an improved source of water, 89%; equally, 86% said it takes them  $< 15$ min to reach the water source. However, these variables were not significantly associated with the occurrence of diarrhoea. Again, the majority of the parents/caregivers, 73.2%, reported not having access to toilet facilities. Only the minority, 19.2%, had access to improved toilet facilities; instead, they used bushes for such purposes. The findings align with the information provided by key informants who indicated a lack of health facilities in the area. “*One of our challenges is lack of toilet facilities.*” P2: HEW-FGR6; P2, Priest KI. Furthermore, a child whose parent/caregiver indicated not having access to a toilet had a significantly increased risk of developing diarrhoeal disease 26.8% (95% CI: [23.03; 30.57];  $p < 0.05$ ) compared to those who indicated otherwise 16.7% and 12.5% respectively. A small percentage, 15.2%, indicated sharing toilets with neighbours. The minority of the parents/caregivers indicated owning a television 10.9% and a refrigerator 14.0%. However, these variables were not significantly associated with diarrhoea occurrence.

On the other hand, more than half of the participants, 68.9%, claimed that they own a radio. Owning a radio was found to be significantly associated with the occurrence of diarrhoea ( $p < 0.05$ ). The majority of the parents/caregivers, 62.0%, indicated that the floor in their house was made up of sand; notwithstanding, this was not statistically significantly associated with the occurrence of diarrhoea. Again, 39.4%. Of the parents/caregivers indicated that the walls of their houses were constructed with corrugated iron/zinc. On the other hand, 50.4% indicated that their roofs were covered with corrugated iron/zinc. This was significantly associated with diarrhoea occurrence among children under five.

*Table 3: Characteristics of the household assets and factors associated with childhood diarrhoea*

Variable	Diarrhoea n (%)	No diarrhoea n (%)	Total n (%)	95% C.I of the prevalence of diarrhoea	p-value*
<b>Rooms used for sleeping</b>					0.033*
One	34 (30.4%)	78 (69.6%)	112 (21.0%)	[26.48; 34.32]	

Two	28 (28.3%)	71 (71.7%)	99 (19.0%)	[24.46; 32.14]	
Three	20 (20.2%)	79 (79.8%)	99 (19.0%)	[16.78; 23.62]	
Four and above	36 (17.6%)	168 (82.4%)	204 (39.0%)	[14.36; 20.84]	
<b>Commonly used source of drinking water.</b>					0.001*
Tap water	56 (19.1)	237 (80.9)	293 (55.3)	[15.75; 22.45]	
Public tap	2 (25.0)	6 (75.0)	8 (1.5)	[21.31; 28.69]	
Buy from private owners	42 (46.7)	48 (53.3)	90 (17.0)	[42.45; 50.95]	
Dug well	11 (16.4)	56 (83.6)	67 (12.6)	[13.25; 19.55]	
Others	15 (20.8)	57 (79.2)	72 (13.6)	[17.34; 24.26]	
<b>Water treatment</b>					
<b>Boil water</b>					0.036*
Yes	86 (21.6)	313 (78.4)	399 (75.3)	[18.10; 25.10]	
No	40 (30.5)	91 (69.5)	131 (24.7)	[26.58; 34.41]	
<b>Add chlorine bleach</b>					0.012*
Yes	70 (55.6)	273 (67.7)	343 (64.8)	[51.37; 59.83]	
No	56 (30.1)	130 (69.9)	186 (35.2)	[26.19; 34.01]	
<b>Do nothing</b>					0.216
Yes	76 (22.1)	268 (77.9)	344 (64.9)	[18.57; 25.63]	
No	50 (26.9)	136 (73.1)	186 (35.1)	[23.12; 30.68]	
<b>Time taken to obtain water</b>					0.294
<15 min	113 (24.7%)	334 (75.3)	457 (86.0%)	[21.03; 28.37]	
15-30	8 (15.1%)	45 (84.9%)	53 (10.0%)	[12.05; 18.15]	
> 30 min	5 (25.0%)	15 (75.0%)	20 (04.0%)	[21.31; 28.69]	
<b>Availability of toilet at home</b>					
Yes	22 (15.5)	120 (84.5)	142 (26.8)	[12.42; 18.58]	0.007*
No	104 (26.8)	284 (73.2)	388 (73.9)	[23.03; 30.57]	
<b>Type of toilet facility</b>					0.022*
Improved	17 (16.7%)	85 (83.3%)	102 (19.2%)	[13.52; 19.88]	
Unimproved	5 (12.5%)	35 (87.5%)	40 (7.5%)	[09.68; 15.32]	
<b>Sharing of toilets</b>					0.825

Yes	4 (16.7%)	20 (83.3.0%)	24 (22.9%)	[09.90; 23.49]
No	12 (14.8%)	69 (85.2%)	81 (77.1%)	[08.01; 21.59]
<b>Ownership of Television</b>				
0.692				
Yes	15 (25.9%)	43 (74.1%)	58 (10.9%)	[22.17; 29.63]
No	111 (23.5%)	361 (76.5%)	472 (89.1%)	[19.89; 27.11]
<b>Ownership of Radio</b>				
0.005*				
Yes	74 (20.3%)	291 (79.7%)	365 (68.9%)	[16.88; 23.72]
No	52 (31.5%)	113 (68.5%)	165 (31.1%)	[27.54; 35.43]
<b>Ownership of refrigerator</b>				
0.111				
Yes	23 (31.1%)	51 (68.9%)	74 (14.0%)	[27.16; 35.04]
No	103 (22.6%)	353 (77.4%)	456 (86.0%)	[19.04; 26.16]
<b>Material of floor of the house</b>				
0.129				
Earth/sand	80 (24.4%)	248 (75.6%)	328 (62.0%)	[20.74; 28.06]
Cement/others	42 (25.8%)	121 (74.2%)	163 (30.8%)	[22.07; 29.53]
Mud/clay	4 (10.5%)	34 (89.5%)	38 (07.2%)	[07.89; 13.11]
<b>Materials of the exterior walls of the house</b>				
0.001*				
Corrugated iron/zinc	69 (33.0%)	140 (33.0%)	209 (39.4%)	[29.00; 37.00]
Bricks	25 (15.2%)	139 (84.8%)	164 (30.9%)	[12.14; 18.26]
Sticks with mud/clay, reused wood	32 (20.8%)	122 (79.2%)	154 (29.0%)	[17.34; 24.26]
Tin	0 (0.0%)	3 (07%)	3 (0.6%)	[00.00; 00.00]
<b>Materials of the roof</b>				
0.002*				
Corrugated iron/zinc	81 (30.3%)	186 (69.7%)	267 (50.4%)	[26.39; 34.21]
Thatched/palm leaf/grass	42 (16.9%)	207 (83.1%)	249 (47.0%)	[13.71; 20.09]
Others	3 (21.4%)	11 (78.6%)	14 (02.6%)	[ 22.27; 29.73]
<b>Total</b>	<b>126 (23.8%)</b>	<b>404 (76.2%)</b>	<b>530 (100%)</b>	

\*p-value Pearson chi-square statistically significant 0.05

#### *4.2.2.6 Factors associated with acute diarrhoea amongst children under five*

Table 4 shows the factors influencing diarrhoeal prevalence; for this purpose, direct logistic regression was performed to assess the impact of several factors on the likelihood that the parents/caregivers would report that their child had diarrhoea in the two weeks before the survey. The model contained nine independent variables (residential area, materials for walls, materials for roof, type of toilet facility, age category of children under five, mother/caregiver age category, ownership of radio, under-five immunization, having a toilet at home and child nutritional status). The full model containing all predictors was significant,  $\chi^2$  (19 N=524) = 66.192,  $p < 0.001$ , indicating that model could distinguish between the respondents who had not and had reported diarrhoea episodes in children under five in the two weeks preceding the survey. The model as a whole explained between 11.9% (Cox and Snell R square) and 17.9% (Nagelkerke R squared) of the variance in the prevalence of acute diarrhoea and correctly classified 78.4% of the cases as shown in Table 4; only four independent variables made a unique statistically significant contribution to the model (rural residential area, age category of children under five, availability of toilet facilities and nutritional status of children under five). The strongest predictor for under-fives suffering from diarrhoea during the two weeks was the place of residence (informal settlement), recording an odds ratio of 36.42. This indicates that children residing in informal settlements were 36.42 times more likely to suffer from the diarrhoeal disease than those living in rural areas, controlling for all other factors in the model.

On the other hand, the odds ratio for 0.31 children living in rural areas was less than 1, indicating that for every increase in living in rural areas, the under-fives were 31% less likely to suffer from acute diarrhoea than those in informal settlements. In other words, 69% of diarrhoea cases among children in the informal settlement would be reduced provided those children move to rural areas. The odds ratio of 2.15 for age categories 36-47 months indicated that children in the age range of 36-47 months were over two times more likely to suffer from diarrhoea than children in other age groups. Availability of toilet facilities was found to be significantly associated with diarrhoea prevalence

$p < 0.007$ . The odds ratio of 0.50 for having a toilet at home was less than 1, indicating that 50% of households with toilets were less likely to report incidents of diarrhoea.

A child's nutritional status odds ratio of 2.05 for nutritional status indicates that children underweight were over two times more likely to experience diarrhoea than those with normal weight.

*Table 4: Logistic Regression-Factors associated with diarrhoea*

Variable	Wald	Df	Sig.	Exp(B)	95% C.I for Exp.B	
					Lower	Upper
<b>Residence</b>	16.64	2	0.00*			
Informal settlement	0.00	1	0.01*	36.42	0.00	
Rural	16.64	1	0.00*	0.31	0.17	0.54
<b>Materials for walls</b>	3.33	3	0.34			
Bricks	0.00	1	1.00	0.00	0.00	
Corrugated iron/zinc	0.00	1	1.00	0.00	0.00	
Sticks with mud/clay/reused wood	0.00	1	1.00	0.00	0.00	
<b>Materials for roof</b>	1.62	2	0.45			
Corrugated iron/zinc	0.24	1	0.62	0.70	0.17	2.90
Thatched/palm leaf/grass	0.00	1	0.97	1.03	0.25	4.21
Rooms for sleeping	0.03	1	0.86	1.02	0.81	1.29
<b>Type of toilet facility</b>	1.71	2	0.43			
Improved	0.62	1	0.43	1.30	0.68	2.49
Not improved	1.31	1	0.25	1.82	0.65	5.04
Number of people per household	1.22	1	0.27	0.91	0.76	1.08
<b>Child's age category in months</b>	13.58	4	0.00*			

< 12	3.06	1	0.08	0.52	0.25	1.08
12-23	4.84	1	0.03*	0.45	0.22	0.92
24-35	0.88	1	0.35	0.69	0.32	1.49
36-47	2.53	1	0.11	2.15	0.84	5.52
<b>Mother's/caregiver's age category</b>	2.08	1	0.15	1.16	0.95	1.41
<b>Ownership of radio</b>	0.18	1	0.67	0.89	0.17	2.90
<b>Immunization status up to date</b>	0.12	1	0.73	1.12	0.60	2.06
<b>Have a toilet at home(1)</b>	7.15	1	0.007*	0.50	0.30	0.83
<b>Nutritional status of under-five</b>	7.72	1	0.01*	2.05	1.24	3.39

Variable(s) entered on step 1: Residential Area, Employment, Educational level of mother/caregiver, the Age category of under-five, Nutritional status of under-five, Source of drinking water, type of toilet facility, type of floor, Under-five immunization status Have a toilet at home.

#### 4.2.3 Discussion

The current study provides the prevalence of diarrhoeal diseases (recall period: 2 weeks) and determining factors among children under five in the Engela district. The study found that the prevalence of diarrhoea in children under five years was 23.8%. This prevalence is slightly lower as compared to studies conducted in other countries. For example, a prevalence of diarrhoea of 26.7% was found in Nyarungenge District in Ruanda, 26% in Mbour Senegal <sup>(8,48)</sup> and 31.0% in Arba Minch District Ethiopia.<sup>(131)</sup> On the contrary, the prevalence found in this study was far higher as compared to a cross-sectional study conducted in Dale District, Sidama Zone, South Ethiopia, which showed a prevalence of 13.6%.<sup>(48)</sup> Also, this was very high compared to the countrywide prevalence of 17%, as reported in the NDHS.<sup>(23)</sup> Furthermore, high prevalence in the current study was observed in the dry season between January and March; similar findings are reported in other countries, with most diarrhoea cases and death cases occurring between February and March due to rotavirus infection.<sup>(8)(132)</sup>

On the other hand, the disparity in prevalence could be related to seasonal variations. The current study was conducted during a dry season between January and March 2019; with water scarcity, people often use water from polluted sources that are normally utilised for washing clothes and bathing. However, there is a need to explore the influence of climatic parameters and diarrhoea seasonality to prevent and manage diarrhoea more effectively. The majority, 86%, of the inhabitants in the informal settlement indicated that they don't have access to tap water; they buy from those who have tap water within their premises. A considerable proportion of parents/caregivers, 44.9%, indicated taking their children to the hospital when suffering from diarrhoea. However, 25.8% indicated that they first treated their children at home before taking them to the hospital.<sup>(92)</sup> Literature indicates that most parents seek health services only when home management has failed. Participants indicated practices such as the mother (20%) and father (8.8%) going for perineal cutting, a child taken to a traditional healer (11.2%), the mother stopping breastfeeding the baby (3.2%), and children taken for prayers (4%) as part of diarrhoea management. However, a high percentage, 93% of the participants, have a low income of N\$190-2000 per house, so buying water might not be practicable. However, diarrhoea prevalence was significantly associated with the source of drinking water for members of the household.

Results from this study indicated place of residence to be statistically associated with the prevalence of diarrhoea. For example, children residing in informal settlements had more odds of suffering from a diarrhoeal disease (OR= 36.42, 95% CI [43.75; 52.25]) compared to children living in rural areas with a lower odd (OR=0.31, 95% CI [0.17; 0.54]). These findings could be attributed to the fact that the majority (74.4%) of the respondents from rural areas indicated having tap water in their plots; and 3.5% indicated having water in their dwellings, while only 10.8% of respondents residing in the informal settlement indicated having water in their plots, with the minority (2%) having water inside their dwellings. However, even if the household has a water connection at home, because of recurrent interruptions in water supply, inhabitants might need to go to dug wells or other water supply sources.

Moreover, it is reported that a safe water supply or treatment played a statistically significant role in reducing the risk of diarrhoea in <5year children.<sup>(8,50)</sup> This study also

found that the child's age group was significantly associated with the prevalence of diarrhoea, which was found to be most prevalent (34.9%) among children in the age group of 12-23 months. These findings were in contrast to results from Mbour, Senegal, where prevalence was highest in the age group 24-59 months.<sup>(8)</sup> However, the findings were in line with findings from a study conducted in Bangladesh by Abdu et al.,<sup>(6)</sup>

Likewise, the nutritional status of children under five was statistically associated with the occurrence of diarrhoea, similarly to findings of a study conducted by Barbara and AlEzzi on risk factors for diarrhoea in children <5 years in Al-Mukalla, Yemen, which indicated that recurrent diarrhoea associated with malnutrition and failure to thrive were among the factors that adversely affected the child's immunity leading to children under five being more susceptible to diarrhoea.<sup>(133)</sup> Furthermore, variables such as the number of people per household, number of rooms for sleeping, and materials for the walls and the roof were significantly associated with diarrhoea prevalence in the two weeks before the survey. Similarly, ownership of a radio was found to be statistically significant. According to Abdur et al.,<sup>(6)</sup> households with access to radio and television were most likely to be informed and seek care from public facilities for childhood diarrhoea. Finally, the availability of toilet facilities was significantly associated with diarrhoea prevalence. The odds ratio of 0.50 for having a toilet at home was less than 1, indicating that households with toilets were half as likely to report the prevalence of diarrhoea in under-fives, controlling for other factors in the model. Furthermore, according to a study conducted by Bitew et al. on childhood diarrhoeal morbidity and sanitation predictors in a nomadic community, un-availability of any toilets [AOR = 2.28, 95% CI = (1.05, 4.97)] and presence of human excreta in the compound [AOR = 11.39, 95% CI = (2.10, 61.79)] were among the factors found to be statistically associated with the prevalence of childhood diarrhoeal disease.<sup>(132)</sup>

#### **4.3. DISCUSSION OF NARRATIVE RESULTS FROM OBJECTIVE 1b: EXPLORE AND DESCRIBE THE PERCEPTIONS OF PARENTS OR CAREGIVERS RELATING TO FACTORS CONTRIBUTING TO DIARRHOEAL DISEASE AMONG CHILDREN UNDER FIVE YEARS OF AGE IN THE ENGELA DISTRICT**

The qualitative results from key informants and parents or caregivers in this study are presented below. The nurses, doctors, traditional healers, and priests were selected using purposive sampling based on the inclusion criteria. Participants were informed about the purpose of the interviews, and consent was sought before data collection. The multistage cluster sampling method was used and considered the constituencies as clusters. The sampling was conducted as follows: In the first stage, five constituencies (Oshikango, Engela, Ongenga, Ondobe, and Endola) out of seven were selected using simple random sampling. The researchers purposively included priests and traditional healers from the five selected constituencies. Equally, health workers were selected from 10 health facilities: one hospital; three health centres (HC) (Omungwelume, Ongha, Odibo) and six clinics (Omudududu, Edundja, Ondobe, Hamukoto Wakapa, Ongenga, and Endola). These health facilities were the study sites of key-informant interviews, six FGD with the parents or caregivers and eight with the HEWs were conducted.

The health workers from the health facilities mentioned above were selected utilizing purposive sampling. Parents/caregivers were selected using convenience sampling. The researcher, student nurses, identified the traditional healers and the priests, assisted by the HEWs. Observations for non-verbal communication and field notes were collected, and a digital voice recorder was used to record interviews with key-informants and FGD. Furthermore, data collection ended when the researcher reached data saturation of the perceptions of factors contributing to diarrhoea prevalence in Engela District. To be able to generate the qualitative findings, a structured question was asked:

- *What are your perceptions of factors contributing to diarrhoea occurrence in your area of living/village?*

This section discusses the main findings emanating from the question:

Probing questions were asked depending on the participant’s responses so that the researcher could get in-depth information.

Finally, the narrative results were transcribed verbatim; ATLAS.ti 8 was used for data analysis by generating themes, quotes, and networks. Networks View Manager (NVM) was of paramount importance since nodes and links retrieved conceptual information. This process helped the researcher graphically depict and explore relationships between the connected nodes and create categories of concepts. Similarly, the process resulted in identifying central concepts from the main themes. These were used to discuss the findings related to the participant’s perceptions of factors contributing to diarrhoeal disease prevalence among children under five in the district. Direct quotes from the different respondents are presented in italics. Four main themes, thirteen themes, and 27 sub-themes were identified and presented in Table 5. Detailed discussions of the themes and sub-themes are reported below.

*Table 5: Themes, sub-themes and codes related to factors contributing to the prevalence of the diarrhoeal disease among under-fives*

<b>THEMES</b>	<b>SUB-THEMES</b>	<b>CODES</b>
<b>4.3.1 Theme 1</b> Parents'/caregivers' perceived beliefs about causes of diarrhoeal disease among children under five	4.3.1.1 Spiritual beliefs	<ul style="list-style-type: none"> <li>• Witchcraft</li> <li>• Lack of Prayers</li> </ul>
	4.3.1.2 Traditional and local beliefs	<ul style="list-style-type: none"> <li>• “Endjadja”</li> <li>• Eating bad food</li> <li>• Breast milk</li> <li>• Plants flowering</li> <li>• Playing under the sun</li> <li>• Teething</li> </ul>
	4.3.1.3 Myths	<ul style="list-style-type: none"> <li>• A child possessed by parents</li> <li>• Children possessing themselves</li> <li>• Other forms of possession</li> </ul>
<b>4.3.2 Theme 2</b> Parents'/caregivers' perceptions related to diarrhoea symptoms	4.3.2.1 Myths1: Child being possessed	<ul style="list-style-type: none"> <li>• Dehydration</li> <li>• Vomiting</li> <li>• Fever</li> <li>• A child being weak, and refusing to eat</li> </ul>
	4.3.2.2 Myth 2 Child suffering from “Endjadja	<ul style="list-style-type: none"> <li>• Lethargic or stop breathing</li> <li>• Diarrhoea and vomiting</li> <li>• Lethargic and stopping breathing</li> <li>• Cold Skin</li> </ul>

<b>4.3.3 Theme 3</b> Associated factors perceived as causing diarrhoea	4.3.3.1 Hygiene practice	<ul style="list-style-type: none"> <li>• Poor hygiene</li> <li>• Not washing hands</li> <li>• Inappropriate food storage</li> </ul>
	4.3.3.2 Source of water	<ul style="list-style-type: none"> <li>• Shortage of water purification sachets</li> <li>• Lack of water sanitation</li> </ul>
	4.3.3.3 Lack of toilet facilities	<ul style="list-style-type: none"> <li>• Open defecation and urination</li> </ul>
	4.3.3.4 Lack of information	<ul style="list-style-type: none"> <li>• Negligence</li> <li>• Poor knowledge</li> </ul>
	4.3.3.5 Residence	<ul style="list-style-type: none"> <li>• Poor caring for the children</li> </ul>
	4.3.3.6 Feeding practices	<ul style="list-style-type: none"> <li>• Informal settlements</li> <li>• Supplementary food</li> <li>• Lack of exclusive breastfeeding</li> </ul>
	4.3.3.7 Malnutrition	
	4.3.3.8 Seasonal	
<b>4.3.4 Theme 4</b> Perceived cause of diarrhoea-related mortality	4.3.4.1 Causes of deaths related to diarrhoea	<ul style="list-style-type: none"> <li>• Lack of urgency</li> <li>• Complications</li> <li>• Poisoning</li> <li>• Malnutrition</li> <li>• Negligence</li> </ul>

### **4.3.1 Theme 1: Parents’ or caregivers’ perceived beliefs related to causes of diarrhoeal disease among children under five**

According to a study conducted in Dale District, Sidama Zone, South Ethiopia, to assess parents’ perception and treatment-seeking behaviours for childhood diarrhoea, parents perceived childhood diarrhoea to result from traditional and biomedical causes<sup>(44)</sup>. In the current study, the main theme related to parents' or caregivers' perceptions of factors contributing to diarrhoeal disease included spiritual beliefs and traditional beliefs. During the FGDs with HEWs and parents or caregivers and key-informant interviews with nurses, priests, and traditional healers at the study area, participants enthusiastically shared their

common beliefs that play a significant role in the district related to perceived causes of diarrhoeal disease among children under the of five years.

#### *4.3.1.1 Spiritual beliefs*

Factors such as witchcraft and lack of prayers emerged as contributing factors to diarrhoeal disease.

- **Witchcraft**

One religious leader indicated his awareness that bacteria cause diarrhoea; however, he added that complicated diarrhoea, whereby the child is just not feeling well but is vomiting, may be caused by witchcraft. Nevertheless, on the contrary, one priest indicated those children with diarrhoea should be taken to the hospital, and after that, the mother can go to ask for prayers once the child is admitted.

*"Bacteria can cause diarrhoea due to unhygienic conditions, but complicated diarrhoea can result from witchcraft where the children are sacrificed for demonic activities. .... It is not just simple diarrhoea; the child will just be not well; there will be vomiting, coughing, etc. P4, Priest (Apostolic Church)*

- **Lack of prayers.**

A mother also indicated that her child was admitted to the hospital suffering from diarrhoea but relatives and friends advised her to take the child out of the hospital and take her for prayers.

*"Last year, my child was admitted suffering from diarrhoea; some friends told me that the child would only be ok if she receives prayers. Sometimes our children become ill because of a lack of prayers; therefore, they advised me to take the child out of the hospital. However, the nurses told the child's father and me to make a decision". P3: M/C-FGD2*

*"Some people take their children for prayers, but it is not common in our villages; we don't accept those things easily; we label those people as being crazy." P2: M/C-FGD2*

The practices mentioned above were verified by a key informant who indicated that they came across a mother who stopped giving the child medication after taking the child to church for prayers.

*“Taking children for spiritual healing happens here, and some parents mix—they come to the hospital and then go for prayers; when they go there, sometimes they end up abandoning what we have given them.”* P3: Doctor

#### ***4.3.1.2 Traditional and local beliefs***

Equally important, related to the qualitative study, some HEWs, parents or caregivers, and traditional healers indicated different types of diarrhoea. Furthermore, according to participants, diarrhoea can occur because the child suffers from "endjadja" (Ovambo word meaning “intestines”, used when someone is suffering from abdominal problems) because a child has eaten bad food, drunk breast milk, plants flowering, playing under the sun, teething, and airborne germs.

#### **“Endjadja”**

Traditional healers indicated that diarrhoea could also be caused by "endjadja" (a word in the Oshiwambo meaning intestine). It is also believed that it causes a child to have convulsions.

*“If a child has diarrhoea and when you touch the child's abdomen, the skin is loose, that is an indication that the child has "endjadja". "Endjadja" can also cause epilepsy in children because it pulls the abdomen to one side.”* P1&2 TH

*Diarrhoea can also be caused by "endjadja" children around here suffer as well from “endjadja”* P4: TH.

One HEW pointed out that her child was suffering from diarrhoea and vomiting; she indicated that she was lethargic and had a high fever. Furthermore, she signposted that she took the child to the hospital, and after slight improvement, she then took the child to a traditional healer who diagnosed the child as suffering from "endjadja". She indicated that her child improved after traditional treatment.

*“With me, it happened with my last-born was having diarrhoea and vomiting. I took the child to the hospital; the diarrhoea improved, but it returned, and this time, the child looked weak, lethargic, and feverish with a very high temperature. I took the child back to the hospital but not much help was given at the hospital, so I took the child to the clinic, and one lady asked me, ‘Why are you not taking your child for traditional treatment; maybe the child has ‘endjadja’.’ From there, I took the child to one lady traditional healer who informed me that the child had ‘endjadja lelambala’ that causes the children to become ill, children who are forever sick. So she did an abdominal massage; after that my child was never ill again.”* HEW; FG1-P3:

- **Eating bad food**

Participants alluded that there are different types of diarrhoea; they specified the type that requires parents to go for perineal cutting and the type that comes from the child-eating bad or not well-cooked food.

*“There are different types of diarrhoea, there is a type of diarrhoea that requires parents to go for perineal cutting, and there is diarrhoea that develops because the child has eaten bad food. If a child has eaten bad food, with such type of diarrhoea one can boil water put a little bit of sugar and give the child”.* P3: M/C-FGD1

*“It is exactly what is being said by these parents if you give your child the wrong food, the child can develop diarrhoea, or the child can develop diarrhoea because the parents have ‘eemhalo’ (small papules found around the vagina).* P4: M/C-FGD1

*“ Children can develop diarrhoea because they have eaten food that is bad, and there is diarrhoea that requires traditional treatment”* P2: TH.

*“Maybe diarrhoea comes from food that is not well cooked”* P3: M/C-FGD6

Key informants also indicated diarrhoea to be more prominent during the festive season when children eat different types of food.

*“Diarrhoea is also common around festive seasons such as December when the children eat different things.”* P10: Nurse.

- **Breast milk**

Mother or caregivers and some HEWs specified that if a child ‘over age’ is breastfeeding when the mother is pregnant or weaning the child from breast milk or breast milk has gone bad can cause the child to develop diarrhoea.

*“We hear a lot about that, and we believe it is true; we took note that when the child is being breastfed when the mother is pregnant, they become skinny, not looking good, they also develop diarrhoea because the milk is no longer good.”* P4: M/C-FDG5

*“Yes, we are told that the milk gets spoiled because of the pregnancy”* P1: M/C- FGD2

*“Breastfeeding when one is pregnant is also a problem. It happened to me; I was breastfeeding my second -last born, unaware I was pregnant. I just came to realize it when my child started to have diarrhoea”.* P1: M/C-.FGD7

HEW indicated they had seen children who were breastfed when their parents were pregnant and developed diarrhoea as a result.

*“That one is true because when a lady becomes pregnant, the milk becomes watery; if that milk mixes with the other milk already in the child's stomach, that causes the child to become sick. I saw one lady who became pregnant while she was still breastfeeding. Maybe she continued breastfeeding because she did not want people to notice that she was pregnant; the husband was the one who came to ask me to go and talk to the wife. I advised her to stop and gave them health information about family planning”.* P3: HEW-FGR7

*“I also came across a lady who was breastfeeding while she was pregnant, but she was not aware that she was pregnant; then, an elderly lady told her that her baby had a nice body, but now she has lost it, and the problem could be she is breastfeed feeding while she is pregnant. She went to the hospital, and her pregnancy test tested positive, but then the child failed to regain weight. P1: HEW-FGR7*

*It is also believed that if the mother is breastfeeding when she is pregnant, the child develops diarrhoea, and the child must be admitted for malnutrition treatment”.* P5: HEW-FGR7

*“They say if you breastfeed a child whose age is over breastfeeding age, you may find people saying a child that is still being breastfed and is having diarrhoea people will say the diarrhoea is caused by breastfeeding; the child should stop being breastfed, and when the mother stops breastfeeding, the child becomes ok. P3: M/C-FGD6.*

*“After I stopped breastfeeding, the child started having diarrhoea, possibly because the breast milk is finishing in the child’s body, the diarrhoea continued in August and September, and from there, I decided to go for perineal cutting”. P2: M/C-FGD5*

A HEW also confirmed that it is believed that breast milk can cause diarrhoea among children; she furthermore indicated that diarrhoea stops when parents have stopped breastfeeding.

*“They say if you breastfeed a child whose age is over breastfeeding age, if that child develops diarrhoea, you may find people saying the diarrhoea is caused by breast milk and the parents are advised to stop breastfeeding, and when the mother stops breastfeeding, the diarrhoea stops”. P5: HEW-FGR3*

*“It is also believed that breast milk can get spoiled and cause a breastfed child to develop diarrhoea. Under such circumstances, the mother has to stop breastfeeding. Even yesterday, I came across a mother who squeezed her breast milk and put it under the sun before giving it to her baby, saying that there are bacteria that need to be killed by the sun”. P1: HEW-FGD2*

- **Plants flowering**

Participants also indicated that diarrhoea is more prevalent when trees are flowering and that that type of diarrhoea can be prevented and managed using the plants’ flowers.

*“I just wanted to indicate that diarrhoea has its months which are September and October; during that time, the trees are flowering, and aloe vera is growing. During that time, even adults develop diarrhoea”. P2: M/C-FGD4*

*“Diarrhoea is also common when the plants are flowering; during that time, the children develop greenish diarrhoea like the leaves of the trees.” P1: M/C-FGD4.*

Key informants also indicated diarrhoea to be common when plants are flowering.

*"Diarrhoea is also common in September when the trees are flowering."* P10: Nurse-KI

- **Children playing under the sun.**

Participants also pinpointed that diarrhoea could be caused by the sun since it is more common when the sun is hot.

*"During summer, when the sun is hot, diarrhoea is very common, but I have not seen a child suffering from diarrhoea during winter; one can think that the sun can cause diarrhoea."* P3: M/C-FGD4

Nevertheless, HEWs also indicated that it is believed that diarrhoea can be caused by exposure to the sun, by children walking bare feet under the sun, or by a breastfeeding mother walking under the sun and then breastfeeding the baby, which causes the baby to start vomiting and develop diarrhoea.

*"Diarrhoea is common when it is sunny; people also say exposure to the sun causes diarrhoea."* P3: HEW-FGR1

*"Also, the sun can cause diarrhoea. There is a belief that when children walk in the sun barefoot, the sun can enter their stomachs, causing them to develop diarrhoea. We also noted that if a mother is breastfeeding and walks in the sun, and from there she goes and breastfeeds the child, that milk becomes hot and the child will start vomiting; therefore, we noted that the sun causes the child to develop diarrhoea".* P3: HEW-FGP4

- **Teething**

One HEW indicated that they believe in traditional beliefs since they are part of them. Furthermore, she stated that she had come across a child suffering from diarrhoea and fever, and shortly after, she realized that the child was teething.

*"We have to believe because it is our traditional belief, it is in our blood; we also see children that have diarrhoea, and after a short period; you find they are growing teeth, and when the tooth is about to come out, you again find the child having diarrhoea and fever."* P3: HEW-FGD1

#### 4.3.1.3 Myths

According to participants, diarrhoea can occur; as a result of the child being possessed by their parents, themselves, or others.

- **The child being possessed by parents.**

Participants indicated that diarrhoea could occur due to a child being possessed by their parents. Furthermore, they indicated that parents could have something at their perineum; e.g., papules in the vagina referred to as "eemhalo", or the skin between the vagina or scrotum and anus "oshipa", or a skin tag around the anus "omushila" that causes the child to develop diarrhoea if not removed.

*"Yes, the mother can develop "eemhalo" in the vagina, while the skin (oshipa) is found near the vagina there, and the tail (omushila) is near the anus (omushila ohau kala komatako kwii). You see, human beings are created like tadpoles of a frog with a tail; when humans grow, the tail hides, and it remains hidden; that parent's tail can cause the child to develop diarrhoea. The father only has (omushila) and (oshipa/okapa) (skin at the perineal area)". Those are the ones that cause the children to develop diarrhoea."* P3: HEW-FGR2.

*"Some of the parents still believe in a child being possessed by parents or being possessed himself/herself when the child has diarrhoea. The parents could possess the child if they have a tail, "eemhalo" or a skin at their perineum."* P4: HEW-FGR2.

A key-informant also suggested that most parents whose children suffer from frequent diarrhoea believe they possess the children.

*Most parents with children suffering from diarrhoea will hear people saying the parents have "omushila" or if the child is vomiting, parents are advised to go for a perineal examination and cutting.* P4: Nurse-KI

Interestingly, some HEWs also believe that children can develop diarrhoea because of being possessed by their parents. HEWs beliefs are reflected in the quotes below:

*"There is also "omushila" that causes children to get sick, children develop malnutrition, diarrhoea, and other diseases because of such."* P4: HEW-FGR3

*“Things like “omushila”, “oshipa” and “eemhalo” are believed in this communities. The elders tell us that if somebody has “omushila” when they stop breastfeeding/weaning, the baby will frequently be ill. They also tell us that a lady that has “omushila”, if she delivers a baby the tail can bend and then the child dies. It may happen to all her children if the tail is not cut off. If the mother delivers at the hospital when discharged as she is moving, the tail is also moving; therefore, the child became sick; they say the male children are more affected by the tail. One would say there is some truth in it because the child becomes ok when the “omushila” is cut, and they remain alive.” P3: HEW-FGR7*

*Diarrhoea has different types, and the type comes when the child is being breastfed and develops diarrhoea. With that type, the baby will pass stools that contain milk, which indicates the parents possess the child”. P2-3&5: M/C-FGD2&5*

- **A child possessed by themselves.**

It is also believed that children could develop diarrhoea because of possessing themselves. For those that possess themselves, it is believed that they have small papules in their mouths. It is also believed that a child can possess themselves by having "omushila".

*“The children can have some small things in their mouths; however, they can also be born with “eemhalo”. P2: TH*

*“Concerning “omushila”, I saw a certain girl who was born with that thing, and it was not cut off; therefore, this girl started to become sick she even become dark, but after she was taken for cutting, she became ok. Do you know that a small child can also have “omushila?” P2: HEW- FGR7*

- **Other possessions**

Besides children being possessed by their parents or by themselves, it is also believed that children can be possessed by other things such as a dog, grandparents, and “oshinyenye”.  
*“When the child is having diarrhoea and is not feeling well, they might tell you that a dog possesses the child.” P5: M/C-FGD2*

*“Sometimes when a child becomes sick, it is said the child is sick because it wants a dog to be ok.” P4: M/C-FGD2*

*“When a child has diarrhoea, or when he/she is passing stools and the rectum is also coming out, it is believed that a dog has possessed the child. P3&P4: M/C-FGD5*

*“Sometimes the child is frequently sick, being feverish, having diarrhoea, not wanting to eat simply because the father's family did not provide the child with "oshinyenye””: (beads that are given to the child, from the father’s family as an indication that the child is accepted in that family) if the beads are provided the child automatically gets better.” P2: M/C-FGD5*

### **4.3.2 Theme 2: Parents or caregivers' perceptions related to symptoms of diarrhoea**

According to a study conducted in the indigenous and resettlement communities in Assosa district western Ethiopia, regarding the danger signs of diarrhoea, 39.5% of the respondents described the passage of three or more loose stools with blood in 24 hours to be a danger sign and symptom of diarrhoea.<sup>(75)</sup> However, contrary, in the current study, diarrhoeal danger signs requiring a child to receive urgent medical attention have been interpreted based on myths: 1. The child being possessed 2. A child is suffering from "endjadja”.

#### ***4.3.2.1 Myth: Symptoms of a child being possessed***

According to parents/caregivers and HEWs, diarrhoea with accompanying symptoms such as dehydration, vomiting, fever, a child being weak, lethargic, or passing stools containing milk indicate that the child is being possessed.

Widely held traditional beliefs play a significant role in the daily lives and health of the Oromo people in this rural area and are likely to determine how caregivers respond to and perceive illnesses such as childhood diarrhoea. Concepts and terminologies for illnesses and their signs and symptoms used by medically trained health workers do not necessarily mean the same for parents or caregivers. For these reasons, beliefs and language may not only influence health-seeking behaviour but may also lead to misunderstandings during medical consultations, health surveys, and health promotion activities.

- **Dehydration**

According to the traditional healer, symptoms of dehydration, such as the child's skin returning back slowly after it is pinched, are regarded as a child being possessed.

*.....” If a child possessed by parents is brought to me or when I just come across such a child, we are just like doctors; if I just grab that child's skin here and that skin is loose, and it is going back slowly, then one can tell that that child possesses itself or is possessed by parents. P4: TH*

- **Vomiting**

According to a traditional healer, a child suffering from diarrhoea and vomiting is regarded as being possessed.

*“Yes, those small things in the child’s mouth lead to diarrhoea and vomiting as well, but if they are removed, the child will no longer be vomiting or having diarrhoea. When they are brought here, some children are weak, with the head like this (moving her neck from shoulder to shoulder); children are neglected simply because their parents are sometimes unaware of those things in their child's mouth”. P2: TH.*

*“It is like this; the type of diarrhoea that occurs when a child is still being breastfed and develops diarrhoea with stools containing milk, and the child is also vomiting milk it is an indication that the child is being possessed.” P4:M/C-FGD1*

*“Many times, for example, with my child, a boy, I used to go for perineal cutting almost every month because he used to suffer from diarrhoea and vomiting many times. Furthermore, immediately when you come back from cutting, he is ok. Before you go for cutting, the eyes of the child may be white-white, but when you come from cutting after 3 or 4 days has passed, the child will start to recover”. P1: M/C-FGD1*

- **Fever**

Health workers (Key-informants) alluded that diarrhoea with or without vomiting and fever may be regarded as the child being possessed by parents; therefore, people whose children are suffering from such may be advised to go for perineal cutting.

*“When the child is having diarrhoea and vomiting or has a fever, to some parents, it is an indication that the child has been possessed; therefore, parents may be advised to go to a traditional healer for perineal cutting”.* P4: Nurse-KI

- **Child being weak**

Diarrhoea, together with the child being weak, might be regarded as a child being possessed.

*Parents need to consult those ladies who know how to do perineal cutting when the child has diarrhoea and is weak (okaana kaleela).* P3: M/C-FGD3

- **Lethargic**

"Diarrhoea with accompanying symptoms such as a child being lethargic, not playing or refusing to eat may also be regarded as a child being possessed.

*Parents may waste their time taking their children to the hospital when they suffer from diarrhoea. On top of that, the child is lethargic (okaana kalembala), not playing, and is refusing to eat because the parents possess such a child.”* P4: M/C-FGD3

#### **4.3.2.2 Myth 2: Child suffering from “endjadja”**

Participants indicated that children diagnosed as suffering from “endjadja” show the following symptoms: vomiting, diarrhoea, and lethargy or stopping breathing. Below, see the participants' replies to a question posed by the researcher.

- **Diarrhoea and vomiting**

Again diarrhoea and vomiting, according to the traditional healer, can also be considered due to a child suffering from "endjadja".

*“The child suffering from endjadja will start vomiting and having diarrhoea.”*P1: TH.

- **Lethargic and stopping breathing**

Furthermore, a child being lethargic or stopping breathing may also be regarded as suffering from "endjadja”.

*“Endjadja” can be dangerous because the child can even stop breathing or be lethargic.”*

P2: TH.

- **Cold Skin**

Diarrhoea, together with cold skin and a child’s breathing stopping, may be interpreted as a child suffering from “endjadja” or regarded as passing away as a result of “endjadja” but not diarrhoea.

**R:** Does the child who stops breathing also have a cough?

*“No, the child doesn’t have a cough; they stop breathing because “endjadja” can climb on top of the child’s chest, then the child’s skin will feel very cold with no temperature.”*

P2: TH

### **4.3.3 Theme 3: Health workers’ perceptions associated with factors contributing to diarrhoeal morbidity among children under five**

According to a community-based cross-sectional study conducted in Kersa district, Eastern Ethiopia, the major risk factors for diarrhoea prevalence among children under five years of age in the two-week weeks before data collection were improper refuse disposal practices, lack of hand washing facilities, living in a rural area, the presence of two or more siblings in a household, and age of the child.<sup>(9)</sup> In the current study to determine factors contributing to the prevalence of diarrhoea amongst children under five in the district, interviews with key informants (doctors, nurses) were conducted, as well as a focus group discussion with HEWs and parents or caregivers and in-depth interviews with traditional healers and priests. On the other hand, healthcare workers (doctors and nurses) indicated causes of mortality among under-fives in the district. In addition, the health worker indicated factors such as poor hygiene, not washing hands, lack of toilet facilities, open-air defecation and urination, inadequate supply of clean water, lack of water sanitation, mother’s or caregiver’s negligence, parent’s or caregiver’s lack of information, poor care, area of residence, improper food storage, poor feeding practices, lack of exclusive breastfeeding, malnutrition and seasonal changes to have contributed to the prevalence of diarrhoeal disease in the district.

#### *4.3.3.1 Hygiene practices*

The health workers indicated hygiene-related factors such as poor personal and environmental hygiene, not washing hands, lack of water sanitation, and inappropriate food storage contributed to the prevalence of diarrhoea.

- **Poor Hygiene**

Participants indicated unhygienic conditions to be one of the major contributing factors to the prevalence of diarrhoea in the district. Parents/caregivers are reported not to practice personal and environmental hygiene and not to take care of utensils and children's bottles. The following perceptions were expressed.

*"The biggest problem is unhygienic conditions because if you just look at the one who brought the child's physical cleanliness, one can already tell that poor hygiene at home might be contributing to the problem."* P: 2-3 & 9 Nurse-KI

*"I think cleanliness is a problem here; the environment is not clean. If people around here improve based on such, it will help our children not to develop diarrhoea. In the Bible, in the Old Testament, scriptures are talking about things related to cleanliness".* P1: Priest-KI

*"I think poor hygiene also plays a big role; some children are bottle-fed because their parents go to work; the bottles are not taken proper care of, other utensils are also not taken care of, and that is what is causing diarrhoea in children."* P5: HEW- FGP1

*"Poor personal and environmental hygiene is common among many households"* P1: HEW-FG4 & FGP3; P1: Nurse-KI.

Parents or caregivers agreed that cleanliness in their households is a problem. For example, one of them indicated that they were advised not to wash their pots, believing that if pots are washed, the food becomes tasteless.

*"Cleanliness at our households is also a problem; we are advised not to wash the used pots. If one wants to wash the pot before cooking, they will say, 'No, don't; you are going to wash away the taste of the food, the food will not taste nice."* P2: M/C-FGD2

- **Not washing hands**

Not washing hands was also raised as a matter of concern. HEW indicated that even though they have been giving health education in their communities from house to house, parents or caregivers are still reported as not practising hand hygiene after using a toilet or before feeding the children.

*“Hygiene needs to be emphasized; some people still don't want to wash their hands, children play in the sand, and they are given food without being told to wash hands, and parents are also touching food without washing hands. If they can change, start washing their hands, and clean their pots and plates, their children may suffer less diarrhoea.”* P1 & 2: HEW-FGP3

*Even a glass of "otombo" (a traditional beverage prepared locally) goes around from one person to another. When someone goes to urinate, they come back, touch some bottle without washing hands, and if one is breastfeeding, they breastfeed the baby without washing hands.* P1: MC-FGD2.

On the other hand, parents or caregivers also indicated that despite the health education they were given by HEWs related to hand hygiene, very few community members implement and use such.

*“The Health Extension Workers told us to put water in the containers to be able to use it for handwashing before eating, but we don't do it. Like in our village, it is only three households that make use of such. Some people made those containers to wash hands, but they are not being used”.* P3: M/C-FGD2.

- **Inappropriate food storage**

In this study, participants indicated that children are given food kept for long hours without being well stored or covered. Furthermore, it is stated that for children that are being bottle-fed, the bottles are not properly stored, giving flies a chance to land on them and putting the child at risk of developing the diarrhoeal disease.

*“Some children become sick because they are given porridge that has stayed for long times.”* P5&8: Nurse-KI

*“Some parents here just don't care; diarrhoea comes if a child eats food that was not covered; children from a few months old up to three years are vulnerable. Let me say if a child is bottle-fed, it is possible for the flies to land on the child's bottles, which can lead to a child developing diarrhoea.”* P1&4: Priest

#### **4.3.3.2 Source of water**

Inadequate clean water supply is reported to be a problem in the district. Participants reported that not everybody in the district has access to tap water; they drink from unprotected open wells since they cannot afford to buy drinking water.

*“The biggest challenge here is water provision; not everybody has access to tap water; most people use water from ponds, dams, surface water, etc.”* P9: Nurse-KI

*We also need water; most people buy water from those with a tap of water at their houses; however, those who cannot afford it get their water from open wells”.* P3: Priest-KI

*We fetch water from dug wells, we don't do anything, and there are no medications to treat the water”* P4: M/C-FGD7.

*“We indeed have rural clean water supply, but it is not always there throughout the year; these people make use of drying pans.”* P7: Nurse –KI.



*Figure12 Family fetching water from private dug-well (source: researcher's own picture)*

*Some people up to today are drinking water from ponds, which is why some children develop the diarrhoeal disease". P2-3: HEW-FGP3.*

- **Shortage of water purification sachets.**

Even though people reported drinking from open water sources, parents or caregivers complained about a shortage of water purification sachets they usually collect from government-owned health facilities.

*"We need water purification sachets; we are drinking water from boreholes" P5: M/C-FGD3.*

*"Yes, diarrhoea is a lot around here, I think as a result of water; we fetch water from dug wells, we don't do anything, there no medications to treat the water" P4: M/C-FGD2.*

*"Another thing we need lots of water purification sachets because they are also helpful, however, most of the time they are out of stock, most people here fetch their water from dug wells, and some of them don't boil the water" P6: HEW-FGD7.*

*“We need water purification sachets; we are drinking water from boreholes. The hospital is far, and there is a shortage of medications. Our children’s immunizations are not up to date, not because we did not bring them to the hospital but because the vaccines are out of stock”*. P5: M/C-FDG5

A key informant confirmed the shortage of water purification sachets raised by the parents or caregivers.

*“People do come to our healthcare facility asking for water purification sachets, and most of the time, they are out of stock”* P: 8 Nurse-KI

*“We used to provide them with water purification sachets, but it has been a long time now that we haven’t gotten those supplies.”* P9: Nurse-KI

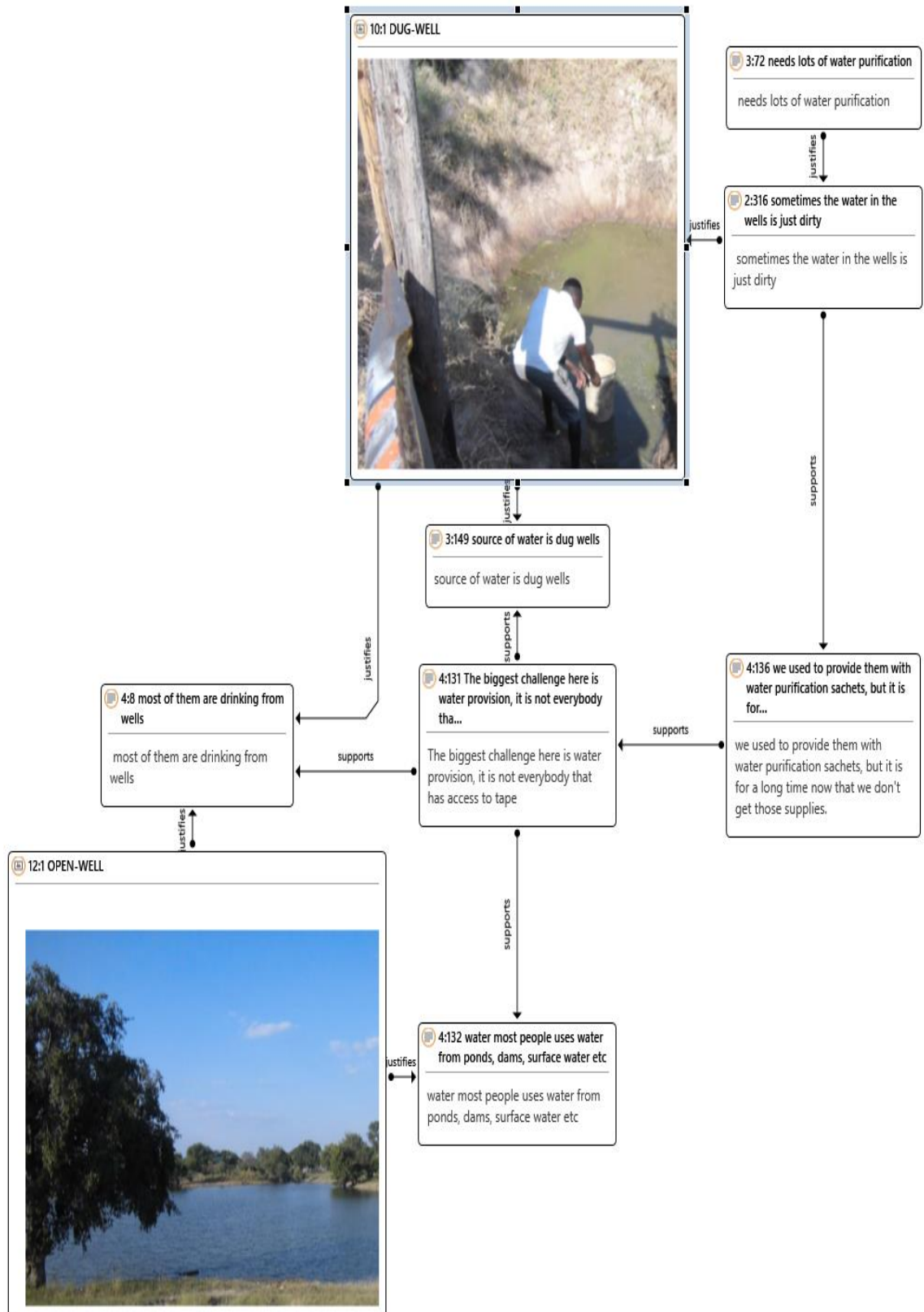


Figure 13 Pictures and linkage of related quotes from focus group discussion and in-depth interviews (Source: researcher's picture)

- **Lack of water sanitation**

The water that is being used is reported to be not clean. Additionally, healthcare workers indicated a shortage of water purification sachets at health facilities and people using dirty water from dug wells and other sources without boiling it or using water purification sachets.

*“That water is dirty, having small insects.”* P3&P5: HEW-FGP3

*“People are using water that is not clean, most of them their source of water is dug wells they don't even boil the water, but they give it to the children to drink. We inform them that the children are developing diarrhoea because they don't boil the water. So we noted that mostly the water being used is the source of the problem.”* P1: HEW-FGP3:

*“Diarrhoea is because of dirty water; most drink from wells and surface water.”* P1&2: Nurse-KI

*We fetch water from dug wells, don't do anything, and there are no medications to treat the water”* P5: M/C-FGD2.

*“What is lacking here is proper sanitation and proper water reticulation. If we could stop open defecation, build communal boreholes, and drill boreholes, I think half of these conditions would be sorted. The major impediment to dealing with these conditions here is water sanitation”.* P3: Doctor-KI.

*“Using water that is not clean, most of their water source is dug wells; they don't even boil the water, but they give the children to drink. We inform them that the children are developing diarrhoea because they don't boil the water”.* P1: HEW-FGR2

*“I think diarrhoea is more prevalent during that time when the water pans are drying; these people use drying pans, and during that time, they share the water with the animals.”* P7: Nurse-KI

Furthermore, parents or caregivers indicated that the water is sometimes dirty (**see picture below**), and people step in the water wearing shoes. However, they also agreed that they don't do anything to the water.

*“I think the water we use could be a problem, the water we use is from dug wells, and sometimes the water in the wells is just dirty.”* P3: M/C-FGD6

*“Yes, yes we go fetch water, and we step in the water with our feet some step with their shoes”* P5: M/C-FGD2.

*“We don’t do anything; you mean boiling the water—no, we don’t do it”.* P2: M/C-FGD6



*Figure14: Dug well at Oshikango informal settlement*

#### ***4.3.3.3 Lack of toilet facilities***

Participants indicated lack of toilet facilities to be one of the challenges in the area, contributing to the increasing prevalence of diarrhoeal disease.

*“We need toilet facilities around here; I built my toilet, as you can see that one (pointing at a small structure), and everyone around here was using it. They make it dirty; therefore, I decided to close it. For now, only the members of my household are using it. Priest KI*

*People around here defecate anywhere. P2&3: Doctor KI*

*“Diarrhoea prevalence around here has to do with hygiene and sanitation. There is a problem, still, you find people that don’t have proper hygiene, no water reticulation, and no proper toilets. Like yesterday, for example, I came across a child with diarrhoea, but almost every two weeks, the child is brought in suffering from diarrhoea. Therefore, I asked the mother where you are getting your water? She indicated it was from an open well; I further asked her, do you have a toilet? But she replied, no, we use the bushes, which is the real problem. I think those are the most contributing factors”. P3: Doctor-KI*

- **Open defecation and urination**

Open defecation and urination are a problem in the district; participants indicated that most of the residents don’t have toilet facilities, and people urinate and defecate everywhere and, consequently, contaminate the water.

*“Diarrhoea comes from using contaminated water and not having toilets because people are just defecating in the bushes, and the flies come to their food.” P4: HEW-FGR1*

*“But honestly, we need toilets and water. Our people need to be taught that open defecation is not nice for their health and the rest of the community. Hygiene is a problem; you should have time and go to the shebeens (referring to the researcher); you will find someone is drinking here, and he just stands, turns his back, and starts to urinate; they do not even go far because the toilets are not even there”. P3: Doctor-KI*

*“When I asked this patient, ‘Where is your toilet?’ she said, ‘It is the bush.’ She kept being re-infected. If it was ensured that every house has a toilet and people stop using the bushes, we would solve half of these problems. Most of our people don’t have toilets”. P2: Doctor-KI*

#### 4.3.3.4 Lack of information

Factors such as a parent or caregiver negligence, lack of knowledge, and poor child care were reported to have contributed to diarrhoea prevalence.

- **The parent or caregiver negligence**

Parents are reported as not following the advice given by the health workers, based on ignorant excuses such that they have been living under unhygienic conditions for a very long time but have not died.

*“People are using utensils that are not clean, they don't even boil the water, but they give the children to drink. So we inform them that the children will develop diarrhoea because of not boiling the water. But in turn, they tell us that the Ovambo tribe does not die from eating bad food, using utensils that are not clean, and not washing hands (vati omuwambo iha fi ngaa, ndee hwangu, oinima omu tamu pelwa uunona inai koshwa, ovanhu otava li inave likosha keenyala)”*. P1: HEW-FGP3.

*“Some are failing to do away with the culture of using a basin where everybody is supposed to wash hands. We have introduced them to pour water from a container (“okandini”), but sometimes they have the “okandini,” but they are not using it.* P2: HEW-FGP3.

*“They feed small children with this fermented milk, especially children under five, milks such as “oshikandela, oshitaka, maere” etc. ... These children can only tolerate it up to a particular time, then they start having osmotic diarrhoea, and when you come to tell the parents that what they are doing is wrong, it is very hard for them to change.* P2: Doctor-KI

*“I have attended some weddings, and I have seen some people who come from towns; when they are at the wedding, their sanitation and hygiene practices are zero; they do even share this cloth to dry hand. Maybe it is something we grow up with, and people believe that if I have been doing this for 40 years, nothing can happen to me”*. P3: Doctor-KI

*"If you try to advise them, they will reply by telling you that they have been eating from dirty things for a very long time, but they are not dead. (Eshi ngaa to popi, otaku ti kaana ove, efa she otwa lya nale, oinima nekako, nde inatu fya). P4: Nurse-KI*

*"We don't think the elderly people who are the majority of the caregivers do boil this water. Furthermore, most people don't have toilet facilities. The HEWs do try their level best to give them health education, but people don't listen to even the tips about water; some people are not practicing that." P9: Nurse-KI*

The parents/caregivers also indicated that they are informed about boiling the water before drinking it, but they don't do it. As indicated in the quote below.

*"Water is scarce, we get our water from dug wells, and we are informed about boiling that water before drinking it, but we don't do it; we drink it without boiling it; therefore, the children can develop diarrhoea." P6: M/C-FDG5*

- **Parent's/caregiver's poor knowledge**

Data collected reveals that some parents or caregivers lack information about the importance of boiling water before drinking it. Furthermore, key informants stated that even educated people do not know how to feed their children properly.

*"The water that is being used is the problem, the majority of people around here use water from ponds, dams, wells, etc., but maybe they don't have the information about the importance of boiling the water before drinking." P6: Nurse-KI*

- **Poor child care**

Poor care for children under five was raised as a matter of concern.

*"Mostly, children under five become sick because they are not well-taken care of by their parents. If children play outdoors in the sand, a child can pick up bacteria from the sand. Using water that is not clean and food that is not well-taken care of, like not being covered. P2: Priest*

*"Some children become sick because of poor caring; for example, some children are being given porridge that has stayed for many hours." P8: Nurse-KI*

*“The caretaking sometimes is not there because some parents like to go to shebeens and they stay there for very long hours, and they go with the child since morning.” P5: HEW-FGR3*

*“There is no proper caring of the children; even the young parents don't take proper care of their children” P1: HEW-FG4*

*“The caretaking sometimes is just not there, because some parents like to go to shebeens and they stay there for very long hours, they go with the child since morning to drink “tombo,” and the children are also given “tombo” (locally brewed drink made from sorghum) to drink. From there, the children develop diarrhoea and malnutrition. P5: HEW- FGR3*

Some participants indicated that most children in their areas are under the care of older people. Furthermore, they noted that children under the supervision of elderly people frequently do not receive proper care, consequently contributing to developing the diarrhoeal disease.

*“Most of the time, the majority of the children from around here develop intestinal parasites and diarrhoea. In our villages, most of the children are taken care of by elderly people. You may find more than one child, aged one, two, and three years, etc., being taken care of by an elderly lady. The care for such children may be difficult for an elderly person, and cooking for those children also becomes a problem. During the fieldwork season, the old lady might not have time to take care of these children; therefore, you find them being given food on unwashed plates. Dogs lick the used plates, and the old lady uses those plates again without washing them and gives them to the children to eat from. Cleanliness with elderly people is very poor.” P1: HEW-FGR4*

*“Children are being taken care of by the elders who drink “tombo” (a locally brewed drink made from sorghum), and they give the children to drink as well; therefore, the children develop diarrhoea.” P8&9: Nurse-KI.*

The quotes above were evidenced by a mother whose child was under the grandmother's care and during the FGD was admitted at Engela hospital suffering from diarrhoea and malnutrition.

*“My child stays with the grandparent from the father’s side and is admitted with malnutrition and diarrhoeal disease” P1: M/C-FGD6*

#### ***4.3.3.5 Area of residence***

Informal settlements are overcrowded, and people live in crowded shacks with no toilet facilities; this has been reported to be one of the factors contributing to the prevalence of the diarrhoeal disease among children in the region.

*“Children around here live in crowded places with no toilet facilities, which also put them at risk of contracting diseases such as diarrhoea. Furthermore, some households are overcrowded; if many children sleep in the same place and one has diarrhoea or other infectious diseases, they may infect other children as well.” P2: Priest*

*“At the informal settlement, you may find a man urinating alongside the shebeen or at the roadside, and without washing their hands, they go and eat meat; such practices can contribute to the prevalence not only of diarrhoeal diseases but other diseases.” P2: Doctor-KI*



Figure15: Oshikango informal settlement (source: Researcher's own picture)

#### 4.3.3.6 Poor feeding practices

Factors such as giving very young children supplementary food and not adhering to exclusive breastfeeding were reported to contribute to diarrhoea prevalence.

- **Supplementary food**

Key informants perceived diarrhoeal prevalence amongst children under five being contributed to by parents' or caregivers' feeding practices. Parents or caregivers are reported to be feeding small babies with cultured milk and giving children locally brewed drinks (tombo). Poor feeding practices were evidenced by the participants' quotes below: *"I believe it is mostly on the mother's side. The mother is the one that contributes to the prevalence of diarrhoeal disease. For most parents in this area, one can find small babies, and they are already being fed with "omaere, oshikandela, oshitaka, etc." (Namibia dairies products made out milk) P1: Doctor-KI*

*Children that are being taken care of by the elders who like to drink “tombo” and share with them—that is why they develop diarrhoea.” P8&9: Nurse-KI;*

*“.....Some parents like to go to shebeens to drink “tombo” and stay there for very long hours; they go with children since morning, and they are given no food. Instead, they are given “tombo” (locally brewed drink) to drink; from there, the children develop diarrhoea and malnutrition.” P5: HEW-FGR3*

*“I should say that children under the age of five who have been diagnosed with diarrhoea around here, maybe over 90% are associated with poor feeding practices, and that is a big-big problem”. P3: Doctor-KI*

- **Lack of exclusive breastfeeding**

Key-informants perceived the lack of exclusive breastfeeding to have contributed to diarrhoeal disease prevalence. Some of the parents that are HIV positive are reported not to give breastfeeding. In addition, some young parents are not willing to breastfeed for the reason that they don't have enough milk. Lack of exclusive breastfeeding was shown in the key-informant quotes below:

*“There are those who still believe that if they are HIV positive, they cannot breastfeed, and on top of that, when they avoid breastfeeding, they cannot afford formula. Maybe it is just that whole thing about the importance of breastfeeding, and they go and give the children food with poor nutrition content; this leads to malnutrition and diarrhoeal diseases.” P2: Doctor-KI*

*“Most of these young parents don't want to breastfeed their babies; you find them telling you that they don't have enough milk, sometimes when the child is too young to be introduced to solid food. They start giving the child soft porridge, and there is no proper care of the child's bottles. P2&6: HEW- FGR3&4*

*“Lastly, it is this thing of not breastfeeding. I think not breastfeeding is a problem leading to an increase in malnutrition and diarrhoeal disease in these areas.” P3: Doctor-KI*

*“Based on my own experience—I have not researched it, but I think the majority of what causes malnutrition is poor feeding practices. I noticed grandparents bring in many children; the parents of those children are absent; they will tell you the mother is somewhere else and that the mother did not breastfeed the child exclusively for six months.”* P1: Doctor-KI

#### **4.3.3.7 Malnutrition**

According to the literature, malnourished children are more likely to have more diarrhoea episodes, and children with the diarrhoeal disease can quickly become malnourished due to weight loss.<sup>(65)</sup> Hence key informants perceived diarrhoea prevalence among children under five in the study area to be associated with malnutrition, as stated below:

*“I should say that for children under the age of five who have been diagnosed with diarrhoea, around 90% of them also have malnutrition.”* P3: Doctor-KI

*“Most children that develop diarrhoea are those that are not well fed, since they develop malnutrition and as a result suffer from diarrhoea and other diseases.”* P4: Nurse-KI;

#### **4.3.3.8 Seasonal**

A key informant indicated that diarrhoea prevalence in the region is more common during certain months of the year, more so during the rainy season when the oshanas are flooded, as well as when the home-made pans are drying, leading to humans sharing water with animals (**see picture below**)

*“Most of the time, diarrhoea is common when the “oshanas” are flooded because of using contaminated water.”* P2: Nurse-KI

*“Mostly diarrhoea is widespread, especially during the rainy season when most people get their water from wells and dams, as well as surface water, etc. That is when diarrhoea is extremely common (diarrhoea ohai kala ko ihapu nai).”* P4&5; P1: Nurse; Doctor-KI



Figur16: Open well at Engela District (source: Researcher's own picture).

*“I think diarrhoea is more prevalent when we have spring. Just to add to that, I am aware of that because people come to our healthcare facility asking for water purification sachets, but most of the time they are out of stock”.* P7: Nurse-KI

*“Diarrhoea is more common during the rainy season.”* P9: Nurse-KI

*“Diarrhoea is more common here around August, with no water in the wells. Children possibly develop the diarrhoeal disease because of the water they are drinking”.* P1: Nurse-KI

*“... Especially during late September, October, and November, it is when the cases are very high.”* P5: Nurse-KI

*“Like during these coming times—February and March—when children are eating guavas, they suffer a lot from diarrhoea.”* P8: Nurse-KI

Some Parents or caregivers indicated that diarrhoea is more common when the plants are flowering and when the sun is hot.

*"I just want to indicate that diarrhoea has its months; in September and October; during that time, the trees are flowering, and even adults develop diarrhoea."* P2: M/C-FGD4

*"Around here, children suffer from diarrhoea during summer when the sun is hot. I have not come across a child suffering from diarrhoea during winter, and we believe the sun can cause diarrhoea."* P3: M/C-FGD4

#### **4.3.4 Main theme 4: Health workers perceived factors contributing to mortality among children under five suffering from the diarrhoeal disease in the district**

Based on a study conducted among caregivers of children under five years in Ile Ife Nigeria, illness behaviour was reported poor, as most waited at least one day after the onset of symptoms before taking any action.<sup>(134)</sup> In the current study, health workers indicated causes related to diarrhoea mortality: lack of urgency to seek help, delay in seeking health care, diarrhoeal complications, malnutrition, using traditional healers, and poisoning from herbal medications have contributed to mortality amongst children under five.

##### *4.3.4.1 Causes of deaths related to diarrhoea*

Related to contributing factors to diarrhoea-associated deaths among children under five of age, health workers indicated factors such as lack of urgency, diarrhoea complications, herbal poisoning, malnutrition and parents' negligence to have played a role.

- **Lack of urgency to seek help**

Some community members are reported to lack urgency in bringing the critically ill child to the hospital.

*"Parents or caregivers might be intending to come and seek help, but the lack of urgency for seeking help is a problem."* P4: Doctor

*"I noted there are some constraints preventing parents from bringing their sick children to the hospital. However, I realized their sense of urgency is not ok; imagine someone can even deliver in the night at home, sleep with the placenta outside and come the*

*following morning to me; they just don't understand about the consequences. Another example indicating lack of urgency is this: a child who was brought in dead had been having convulsions, but the mother proceeded to cook supper and went to sleep; she just slept like that, only to realize that the child was dead in the morning. Her idea had been that when it was daylight, she would take the child to the hospital. The idea was there, but the idea of when to execute that idea was the problem. People can just decide and say we will sleep now and proceed in the morning". P3: Doctor-KI.*

- **Diarrhoea complications**

Some health workers indicated that some children die because of diarrhoea-related complications.

*"We do have a lot of children that pass on from diarrhoea. Sometimes we help them if they present early, but if someone comes with a child with severe complications, we try to help them, but the baby will still die". P1: Doctor-KI*

- **Poisoning from herbal medications**

The management of diarrhoeal disease with traditional herbs has contributed to poisoning and eventually caused mortality in children under five.

*"Yes this year we had one child where we had suspected poisoning; this child was exposed to herbal medicine and developed multiple organ failure—encephalopathy, liver failure and renal failure. The child had been exposed to a lot of herbs and came in already with organ failure." P2: Doctor –KI*

*" Yes, one child who was just brought in dead, we suspected even poisoning and even involved the police; the child was apparently taken to traditional healers. I am still waiting for the post-mortem result". P2: Doctor –KI*

- **Malnutrition**

Lack of breastfeeding and the introduction of solid food have contributed to recurrent diarrhoea and malnutrition, leading to children mortality of children under five.

*"Recently, I took note of a child who died as a result of malnutrition; the mother of this child was in the south; she stopped breastfeeding, did not buy milk for the child, and the grandmother introduced solid food. The child had diarrhoea now and then and developed malnutrition and eventually passed away because of such". P5: Nurse-KI*



#### 4.3.5 Discussion

The findings from this study showed that health workers perceived diarrhoea prevalence in the district to be related to factors such as poor hygiene, not washing hands, lack of toilet facilities, open defecation, source of water, lack of water sanitation, shortage of water purification sachets, mother or caregiver's negligence, mother or caregiver lack of information, poor child care, unhealthy area of residence, inappropriate storage of food, lack of exclusive breastfeeding, poor feeding practices, malnutrition and seasonal changes. The findings from this study are contrary to those from a study conducted in Arba Minch District in Southern Ethiopia, where the availability of latrines and water sources were not significantly associated with diarrhoeal morbidity. Nevertheless, that study found poor maternal hand-washing practices to be positively associated with the occurrence of diarrhoeal morbidity.<sup>(135)</sup> This is in agreement with other studies conducted elsewhere.<sup>(9)(45)</sup>

In this study, we identified diarrhoea-related beliefs and potentially harmful practices that are not safe and should be discouraged. Nevertheless, locally recognized types of diarrhoea, such as persistent diarrhoea, dehydration, vomiting, diarrhoea together with fever, a child being weak, lethargic, and passing stools containing milk, were often inappropriately interpreted. Children with diarrhoea showing the above-mentioned symptoms were regarded as being possessed by parents, by themselves, by their ancestors' spirits, or suffering from "endjadja". Therefore, parents went for perineal cutting, and children were taken to traditional healers and prayers. Furthermore, parents or caregivers perceive teething to be one of the causes of diarrhoeal disease. These findings align with a study conducted in Indigenous and Resettlement communities in Assosa District of Western Ethiopia, whereby indigenous communities agreed that teething causes diarrhoeal disease.<sup>(75)</sup> In addition, diarrhoea is perceived to be caused by the child's eating bad food, taking breast milk, flowering plants, and playing under the sun. A systematic review of harmful practices in managing childhood diarrhoea in low- and middle-income countries indicates that in multiple cultures, "dirty" breast milk was thought to cause certain types of diarrhoea.<sup>(40)</sup> Lack of exclusive breastfeeding and stopping breastfeeding thought to be part of management and preventing diarrhoeal disease among children under five are some aspects highlighted during discussions with the participants. Breast milk is

documented in many observational studies to play a role in protecting infants against diarrhoeal disease. Studies indicated that human milk contains glycans, which include oligosaccharides in their free and conjugated forms, which are part of a natural immunological mechanism.<sup>(136)</sup>

Findings from the current study can be used as baseline data for policymakers in formulating national guidelines for health in infants and young children and achieving millennium development goals for reducing child mortality.

#### **4.4. OBJECTIVE 1c: DETERMINE THE KNOWLEDGE ATTITUDE AND PRACTICE AMONG PARENTS REGARDING DIARRHOEAL DISEASE AMONG CHILDREN UNDER FIVE YEARS OF AGE IN ENGELA DISTRICT**

##### **4.4.1 Determine the knowledge of the etiology, prevention, and management of acute diarrhoea among children under five in Engela District**

According to the World Health Organization (WHO), diarrhoea is the passage of three or more loose or watery stools in 24 hours.<sup>(42)</sup> Even though most childhood diarrhoea episodes are mild, acute episodes can result in severe loss of fluids and dehydration, consequently leading to severe health-related consequences and death.<sup>(82)</sup> Childhood diarrhoea remains a public health problem and is among the main killers of children under five globally.<sup>(9,47)</sup> Based on various reports, in developing countries, 12 million children die every year before they reach their fifth birthday.<sup>(46)</sup> As stated by WHO,<sup>(53)</sup> diarrhoea can be prevented through adequate sanitation and drinking safe water and effectively treated at home with oral rehydration salts (ORS) or with a solution of clear water, sugar, and salt. Additionally, supplemental treatment with zinc 20mg tablets improves the outcome. Consequently, if is not managed properly, diarrhoea leads to dehydration, which can severely threaten the affected child's wellbeing. During diarrhoeal episodes, electrolytes such as sodium chloride, potassium, and bicarbonate are lost through liquid stools, vomit, sweat, urine, and breathing, leading to dehydration, provided fluids are not replaced.<sup>(13,53)</sup> Lesser severe dehydration in over 90% of the cases can be adequately treated with ORS and other fluids used at home to prevent dehydration. Adequate and appropriate knowledge, as well as a good understanding of the underlying etiological

factors and dynamics involved in the occurrence of diarrhoeal disease and its progression to diverse severe outcomes, complications, and mortalities, are essential to its prevention.<sup>(2)</sup>

#### *4.4.1.1 Data collection procedure*

A structured questionnaire was developed in English by reviewing the literature. The questionnaire was then translated from English to the local language (Oshikwanyama) and then translated back to English after data collection. During data collection, the researcher, student nurses, and HEWs read the questions to the respondents and filled in the respondents' answers precisely as the respondent gave them, and left with the questionnaire when the interview was over.<sup>(123)</sup>

#### *4.4.1.2 Measurements of the dependent variable*

The primary outcome variable was the knowledge of the parents/caregivers. In this study, knowledge of parents/caregivers included: definition, causes, treatment of diarrhoea, benefits of oral rehydration salt (ORS), prevention, and danger signs of diarrhoeal disease. The levels of knowledge were determined using a series of 50 True/False/Don't know questions (Table 7). The overall score was calculated for all 50 knowledge questions for each person. Correct answers were given 1 point and wrong 0. The grading for knowledge was done as follows; 0-59% was regarded as inadequate, while  $60 \leq$  was considered as adequate knowledge.

Socio-demographic factors such as residential area, employment status, average monthly income, ownership of radio and television, as well as mother/caregiver's age, gender, and educational status were exposure variables.

#### *4.4.1.3 Data quality control*

The assessment of the reliability and validity of the data collection tool found a Cronbach's Alpha calculated of 0.810; this shows that the data collection items measured the same concept.

To ensure validity, the questionnaire was adapted from the literature and modified based on the local context. The questionnaire was pretested before data collection on 5% of the sample size in the constituency that was not part of the study. Nevertheless, the instrument

was subsequently modified based on the outcomes of the pilot study. The student nurses and Health Extension Workers (HEWs) were trained each for two days prior to data collection to assist with data collection by the main researcher. The main researcher followed the data collection process daily, and the data were checked for completeness by the main researcher.

#### *4.4.1.4 Data Analysis*

International Business Machines (IBM) Statistical Package for Social Science (SPSS) software version 24 was used for data analysis. Descriptive statistics and inferential statistics were used to summarize the study results. Mean, range standard deviation, frequency, and percentages were calculated. The levels of knowledge were related to socio-demographic characteristics and analyzed at the bivariate level. Chi-square ( $\chi^2$ ) test was used to test for the statistical relationship between independent and dependent variables (knowledge). An independent t-test was conducted to compare the knowledge scores for male and female respondents, access to information, and residential areas. In addition, demographic characteristics significant top-value less than 0.5 were further analyzed using logistic regression to determine factors related to mother/caregiver level of knowledge.

#### *4.4.1.5 Socio-demographic characteristics of parents/caregivers of children under the of five years according to knowledge regarding acute diarrhoea*

Table 6 below presents the socio-demographic characteristics of the parents/caregivers in the study related to knowledge about acute diarrhoeal disease. A total of 530 parents/caregivers took part in the study. Most of the parents/caregivers, 29.4%, were aged between 18-30 years old. The mean age was 40 years (SD=8.38). To allow comparison between different age groups, the age of the parent/caregiver was categorized into groups of 18-30, 31-40, 41-50, 51-60, and above 60 $\leq$  years. The greatest number of parents/caregivers, 29.4%, were under 18-30 years old, and very few were above 60 years 8.7%. However, the highest proportion of adequate knowledge, 47.8%, was observed among the age group 60 $\leq$  years as compared to other age groups. Nevertheless, the

observed difference was not statistically significant,  $p \geq 0.05$ . Most of the participants, 94.3%, were female as compared to males, 5.7%. Moreover, 83.3% of males were categorized as having inadequate knowledge as compared to 63.2% of females. Besides, the observed difference was statistically significant,  $p \leq 0.05$ .

Equally, the majority of the parents/caregivers, 79.8% were from rural areas, 19.2% were from informal settlements, and only a small portion was from urban areas (1%). Nonetheless, the majority, 91.2% of parents/caregivers from the informal settlement, were categorized as having inadequate knowledge, and place of residence was significantly associated with knowledge of diarrhoeal disease  $p \leq 0.05$ .

Furthermore, 16% of the respondents had not attended formal education at all, 46.4% had attended primary education, and the least, 1.9%, had attended higher education; education level was not significantly associated with the level of knowledge. Additionally, more than half of the respondents were single (58.9%), and 23.6% were married, 12.3% were cohabiting, 4.7% were widowed, and a small percentage 0.6%, were separated/divorced. Marital status was significantly associated with knowledge about diarrhoeal disease  $p \leq 0.05$ .

The majority, 89.1%, of the respondents did not own a television; in any case, owning a television was not significantly associated with knowledge about the acute diarrhoeal disease. On the other hand, 79.4% of the parents/caregivers who did not own a radio had inadequate knowledge. Furthermore, owning a radio was significantly associated with knowledge about diarrhoeal disease  $p \leq 0.05$ .

Furthermore, 93.2% of parents/caregivers had a monthly income ranging from N\$190-2000.00; however, monthly income was not significantly associated with knowledge.

Table 6: Socio-demographic characteristics of the parents/caregivers related to knowledge scores

Variable	Inadequate Knowledge n (%)	Adequate Knowledge n (%)	Total n (%)	p-value*
Parent/caregiver age Mean age (mean $\pm$ SD, years)	40.39 $\pm$ 14.41			
<b>Age of parent/caregiver</b>				0.213
18 - 30	107 (68.6)	49 (31.4)	156 (29.4)	
31 - 40	92 (65.7)	48 (34.3)	140 (26.4)	
41 - 50	82 (56.6)	43 (34.4)	125 (23.6)	
51 - 60	36 (57.1)	27 (42.9)	63 (11.9)	
> 60	24 (52.2)	22 (47.8)	46 (8.7)	
<b>Parent/caregiver gender</b>				0.025*
Male	25 (83.3)	5 (16.7)	30 (5.7)	
Female	316 (63.2)	84 (36.8)	500 (94.3)	
<b>TOTAL</b>	341(64.3)	189 (35.7)	530 (100)	
<b>Residential</b>				0.001*
Urban	5 (100.0)	0 (0.0)	5 (1.0)	
Informal settlement	93 (91.2)	9 (8.8)	102 (19.2)	
Rural areas	243 (57.4)	189 (42.6.7)	423 (79.8)	
<b>Parent's/caregiver's education level</b>				0.424
Not educated	59 (69.4)	26 (30.6)	85 (16.0)	
Primary education	147 (59.8)	99 (40.2)	246 (46.4)	
Secondary education	127 (67.2)	62 (32.8)	189 (35.7)	
Higher education	8 (80.0)	2 (20.0)	10 (1.9)	
<b>Marital status</b>				0.018*
Single	203 (65.1)	109 (34.9)	312 (58.9)	
Married	70 (56.0)	55 (44.0)	125 (23.6)	
Co-habiting	51 (78.5)	14 (21.5)	65 (12.3)	
Divorced/separated	3 (100.0)	0 (0.0)	3 (0.3)	
Widow	14 (56.0)	11 (44.0)	25 (4.7)	
<b>Ownership of television</b>				0.501
Yes	35 (60.3)	23 (39.7)	58 (10.9)	
No	306 (64.8)	116 (35.2)	472 (89.1)	
<b>Ownership of radio</b>				0.001*
Yes	210 (57.5)	155 (42.5)	365 (68.9)	
No	131 (79.4)	34 (20.6)	165 (31.1)	
<b>Monthly income</b>				0.923
190-2000.00N\$	313 (63.4)	181 (36.6)	494 (93.2)	
>2000-5000.00N\$	19 (73.1)	7 (26.9)	26 (4.9)	
>5000-10000.00N\$	5 (100.0)	0 (0.0)	5 (0.9)	
>10000.00N\$	4 (80.0)	1 (20.0)	5 (0.9)	

\*p-value Pearson chi-square statistically significant 0.05

#### *4.4.1.6 Aspects and distribution of scores related to parents/caregivers' knowledge of acute diarrhoea*

Table 7 below represents the aspects and distribution of scores related to knowledge of the parents/caregiver regarding definition, causes/contributing factors, treatment, danger signs, and prevention of diarrhoeal disease in children under five.

**Definition of acute diarrhoeal disease:** multiple-response questions were set to test the respondents' knowledge. More than half, 56.6%, of the parents/caregivers correctly defined acute diarrhoea as the passing of three or more loose liquid stools per day for less than 5 to 7 days; however, 25.8% indicated that they don't know this.

**Causes/contributions to the development of the diarrhoeal disease:** questions were categorized as follows: Infection, malnutrition, source, and other causes. A majority, 86.8%, indicated bacteria to be the source of infection; 40% did not agree that a virus can cause diarrhoea. Equally, 40% of the respondents indicated that a condition of the mother or father could be responsible (**a common belief in the area that having a skin tag at the perineal area contributes to a child developing diarrhoea if it is not removed**). During FGD parents/caregivers and HEWs indicated that a child can have diarrhoea because of being possessed. *"A child can have diarrhoea because of being possessed by the parents; that one is very true, my dear."* P1-P6: MC-FGD5

*"Some children become sick as a result of "eemhalo" P6: HEW-FGD3*

Malnutrition as contributing factor: most parents/caregivers indicated that malnutrition makes children more vulnerable to diarrhoea 66.4%. However, some parents/caregivers indicated that a child could develop malnutrition if the mother has multiple sexual partners 24.3% (**a common belief that if a mother is still breastfeeding, she cannot have a love relationship with a man who is not the father of the child**). Nonetheless, respondents agreed that the following factors contribute to diarrhoea infection: unhygienic faecal disposal 57%, flies 67.9%, water contamination with faeces 71.1%, unclean house environment 49.2%, improper storage of cooked food 74.3%, not washing hands before

eating or breastfeeding 71.9% and using infant feeding bottles 54.5%. On the other hand, respondents disagreed that diarrhoea can be transmitted from person to person 41.9%.

During the FGDs with the parent or caregiver, one mother assumed that diarrhoea comes from food that is not well cooked or could be airborne. She furthermore admitted that they don't have an idea.

*“Maybe diarrhoea comes from food that is not well cooked, possibly it is air-borne, and we really don't have an idea”*. P3: M/C- FGD6.

**Home treatment of diarrhoea;** respondents disagree with giving extra fluids 36.4%, giving ORS to exclusively breastfed babies 28.7%, and giving food-based fluids if a child is not exclusively breastfed 48.9%. However, 10.8% of the parents/caregivers agreed to give fruit juice or sweetened tea or cool drink (**Coca-Cola is most used**); 63.6% agreed to give anti-diarrhoeal medication, 24.5% agreed to stop breastfeeding when a child has diarrhoea, 28.7% and 48.9% disagreed with giving ORS to a child that is being exclusively breastfed and giving food-based liquids to a child that is not being breastfed. Furthermore, the majority, 70.6%, agreed that the child should be given salt and sugar water solutions. Also, 75.3% indicated that fluids should be given more frequently than usual, and 73% agreed that ORS treats diarrhoea. Equally, one key informant's informant indicated that in part of home management of diarrhoea at home, a child is being given Coca-Cola and bread. *“Most of the delays are caused by the parents they start treatment at home, and they give things such as Coca Cola and bread they only come when they realize such things are not helping”*P3: KI Nurse.

**Knowledge of diarrhoeal disease danger signs.** Most of the respondents (72.1%), indicated fever to be one of the danger signs. On the other hand, 59.4% of respondents indicated simple diarrhoea within one day to be a dangerous sign, but 32.1% indicated that children becoming very thirsty was not a danger sign of diarrhoeal disease. During the FGD with the HEWs it was indicated that a skin tag at the parent's perineum can make a child lethargic. *The skin (oshipa) makes the child lethargic, but the tail (omushila) is considered more dangerous”*. P3: HEW-FGR7

Nevertheless, it is worth highlighting that regarding **prevention** of diarrhoeal disease, 49.6% of parents/caregivers indicated that diarrhoea in children under five could be prevented by parents going for perineal cutting (**removal of the skin tag that is believed to contribute to diarrhoeal disease**), 24% believed that diarrhoea could be prevented through prayers, and 22.5% indicated it could be prevented if the mother of the child remains faithful to one partner.

*Table 7: Questions on knowledge related to acute diarrhoeal disease (definition, cause, treatment, and preventions)*

Knowledge of the concept of diarrhoea	Frequency n (%)	Frequency n (%)	Frequency n (%)	Frequency n (%)
Variable	True	False	Don't know	Level of knowledge Poor/Good
<b>1. Definition of acute diarrhoea (multiple responses)</b>				<b>P: (54.6%)</b>
Passing stools with blood	80 (15.1)	220 (41.5)	230 (43.4)	310(58.4%) <b>P</b>
Passing of three or more loose or liquid stool per day for less than 5 to 7 days	300 (56.6)	93 (17.5)	137 (25.8)	300(56.6%) <b>G</b>
Passing of loose stools or liquid for more than 14 days	54 (10.2)	239 (45.1%)	237 (44.7)	291(54.9) <b>P</b>
Passing of loose/liquid stools that lasts more than 7 days but less than 14 days	76 (14.3)	215 (40.6%)	239 (45.1)	315(59.4%) <b>P</b>
<b>2. Causes/contribute to diarrhoea (multiple responses)</b>				<b>P: (44.3%)</b>
<b>2.1 Infection</b>				<b>P: (54.3)</b>
Bacterial	460 (86.8)	29 (5.5)	41 (7.7)	460(87%) <b>G</b>
Viral and parasitic organisms	114 (21.5)	212 (40.0)	204 (38.5)	416(78%) <b>P</b>
Mother or father could have a problem	212 (40.0)	153 (28.9)	165 (31.1)	377(71%) <b>P</b>
<b>2.2 Malnutrition</b>				<b>P: (36.4%)</b>
Malnutrition makes children more vulnerable to diarrhoea	352 (66.4)	53 (10.0)	125 (23.6)	352(66.4) <b>G</b>
Diarrhoea is the leading cause of malnutrition	303 (57.2)	91 (17.2)	136 (25.6)	303 (57.2) <b>G</b>
Malnutrition is caused by mother with multiple partners	129 (24.3)	219 (41.3)	182 (34.3)	311(56.7) <b>P</b>

<b>2.3 Sources</b>				<b>P: (48.5%)</b>
Unhygienic faecal disposal	302 (57.0)	81 (15.3)	147 (27.7)	302(57) <b>G</b>
Flies	360 (67.9)	62 (11.7)	108 (20.4)	360(67) <b>G</b>
Water contaminated with faeces	377 (71.1)	56 (10.6)	97 (18.3)	377(71.1) <b>G</b>
Unclean house environment	261 (49.2)	105 (19.8)	164 (30.9)	269(50.8) <b>P</b>
<b>2.4 Other causes</b>				<b>P: (44.2%)</b>
From person to person	119 (22.4)	222 (41.9)	189 (35.7)	411(77.5) <b>P</b>
Inappropriate storage of cooked food	394 (74.3)	53 (10.0)	83 (15.7)	394 (74.3) <b>G</b>
Not washing hands before eating or breastfeeding	381 (71.9)	49 (9.2)	100 (18.9)	381(71.9) <b>G</b>
Using infant feeding bottles	289 (54.5)	108 (20.4)	133 (25.1)	289 (54.5) <b>G</b>
<b>3. Diarrhoea management</b>				<b>P: (59.7%)</b>
<b>3.1 Home treatment of diarrhoea (multiple responses)</b>				
Give extra fluids	205 (38.7)	193 (36.4)	132 (24.9)	325(61.1) <b>P</b>
Give anti-diarrhoeal medicine	337 (63.6)	74 (14.0)	119 (22.4)	456(86) <b>P</b>
Stop breastfeeding	130 (24.5)	228 (43.0)	172 (32.5)	302(57) <b>P</b>
If the child is exclusively breastfed, give ORS or clean water in addition to breast milk	246 (46.4)	152 (28.7)	132 (24.9)	284(53.6) <b>P</b>
If a child is not exclusive breastfed, give food-based fluids such as soup, salted rice water, salted yoghurt or clean water	105 (19.8)	259 (48.9)	166 (31.3)	425(80.2) <b>P</b>
Give salt and sugar water solution	351 (66.2)	59 (11.1)	120 (22.6)	351 (66.2) <b>G</b>
Give fruit juice or sweetened tea or a cool drink	57(10.7)	286 (54.0)	187 (35.3)	286 (54.0) <b>G</b>
<b>3.2 How frequently should fluids be given to a child with diarrhoea? (multiple responses)</b>				<b>P: (43.1%)</b>
More frequent than usual	399 (75.3)	67 (12.6)	64 (12.1)	399 (75.3) <b>G</b>
About the same	78 (14.7)	241 (45.5)	211 (39.8)	289(54.5) <b>P</b>
Less frequent	72 (13.6)	266 (50.2)	192 (36.2)	266(50.2) <b>G</b>
<b>3.3 Benefits of ORS? (multiple responses)</b>				<b>P: (46.7%)</b>
Treat diarrhoea	387 (73.0)	41 (7.7)	102 (19.2)	387 (73.0) <b>G</b>
Prevent dryness of the body caused by diarrhoea	375 (70.8)	69 (13.0)	86 (16.2)	375 (70.8) <b>G</b>
Fluid replacement	232 (43.8)	142 (26.8)	156 (29.4)	298(56.2) <b>P</b>
Prevent further complications	162 (30.6)	169 (31.9)	199 (37.5)	368(69.4) <b>P</b>
Has no benefits	27 (5.1)	257 (48.5)	246 (46.4)	273(51.5) <b>P</b>

<b>4. Which signs indicate that a child needs to be taken to the nearest Healthcare facility? (multiple responses)</b>				<b>P: (44%)</b>
Simple diarrhoea within one day	315 (59.4)	106 (20.0)	109 (20.6)	424 (80) P
Is eating or drinking poorly	330 (62.3)	92 (17.4)	108 (20.3)	330 (62.3) G
Becomes very thirsty	215 (40.6)	170 (32.1)	145 (27.3)	315 (59.4) P
Starts to pass many watery stools	291 (54.9)	117 (22.1)	122 (23.0)	291 (54.9) G
Has repeated vomiting	367 (69.2)	57 (10.8)	106 (20.0)	367 (69.2) G
Develops fever	382 (72.1)	38 (7.2)	110 (20.7)	382 (72.1) G
Blood in the stool	357 (67.4)	75 (14.2)	98 (18.4)	357 (67.4) G
Child not getting better in three days	330 (62.3)	79 (14.9)	121 (22.8)	330 (62.3) G
<b>5. How can diarrhoea be prevented in children under five? (multiple responses)</b>				<b>P: (48.6) %</b>
Remain faithful to your partner	120 (22.6)	242 (45.7)	168 (31.7)	288 (54.3) P
Immunization	327 (61.7)	75 (14.2)	128 (24.1)	327 (61.7) G
Hand-washing with soap	447 (84.3)	36 (6.8)	47 (8.9)	447 (84.3) G
Parents should go for perineal cutting	263 (49.6)	123 (23.2)	144 (27.2)	407 (76.8) P
Food hygiene.	436 (82.3)	30 (5.7)	64 (12.0)	436 (82.3) G
Proper disposal of child's feces	346 (65.3)	59 (11.1)	125 (23.6)	346 (65.3) G
Through prayers	128 (24.2)	241 (45.5)	161 (30.3)	289 (54.6) P

Based on the knowledge score, a relatively high number (64%) of parents/caregivers were categorized as having inadequate understanding based on knowledge of causes, prevention, and management of diarrhoea, and only a few (36%), had adequate knowledge about diarrhoeal disease (Figure 19). The findings are in line with information provided by key-informants indicating that even those parents who were educated they lack

knowledge related to diarrhoea, “I think there is a lot of information needed in these communities because you find most parents, even those who went to school and understood things, feeding their children with this fermented milk; some of these children are small, especially those under five. They feed them with things such as oshikandela, oshitaka, omaere, etc.” P2: Doctor KI

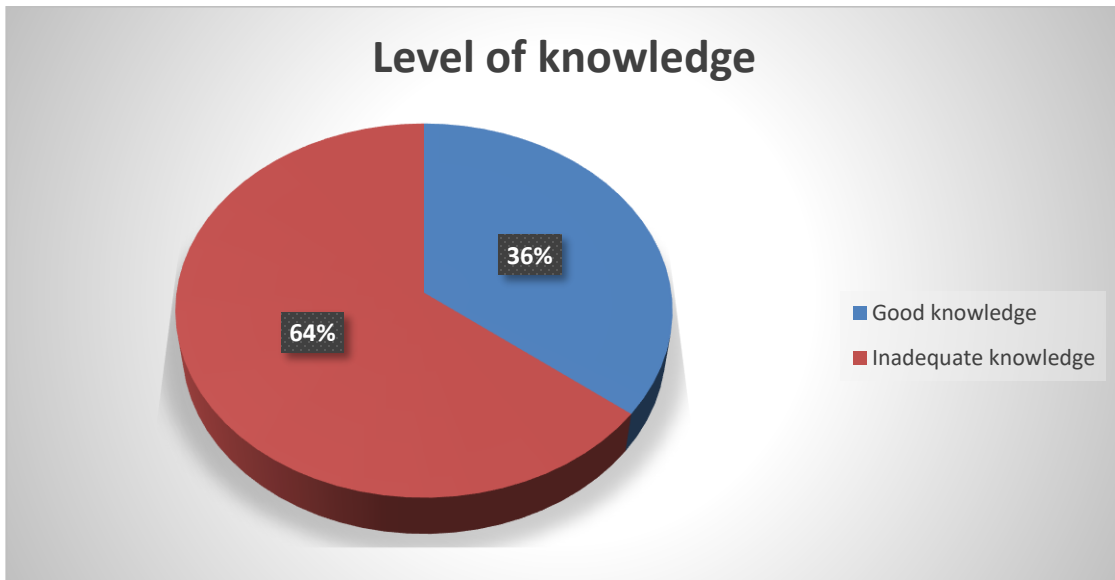


Figure18: Pie chart-Parents'/Caregivers' level of knowledge about the diarrhoeal disease

The mean score for total knowledge is  $50.75 \pm 19.95$  SD (Table 8), and the score range is from 0-90%. The distribution of the scores on this index was significantly skewed towards negative (skewness -418, SE skew 0.11).

Table 8: Diarrhoea knowledge mean score

Mean	SD	N	Variance	Skewness	SE Skew	Range
50.75	19.95	530	398	-418	106	0-90

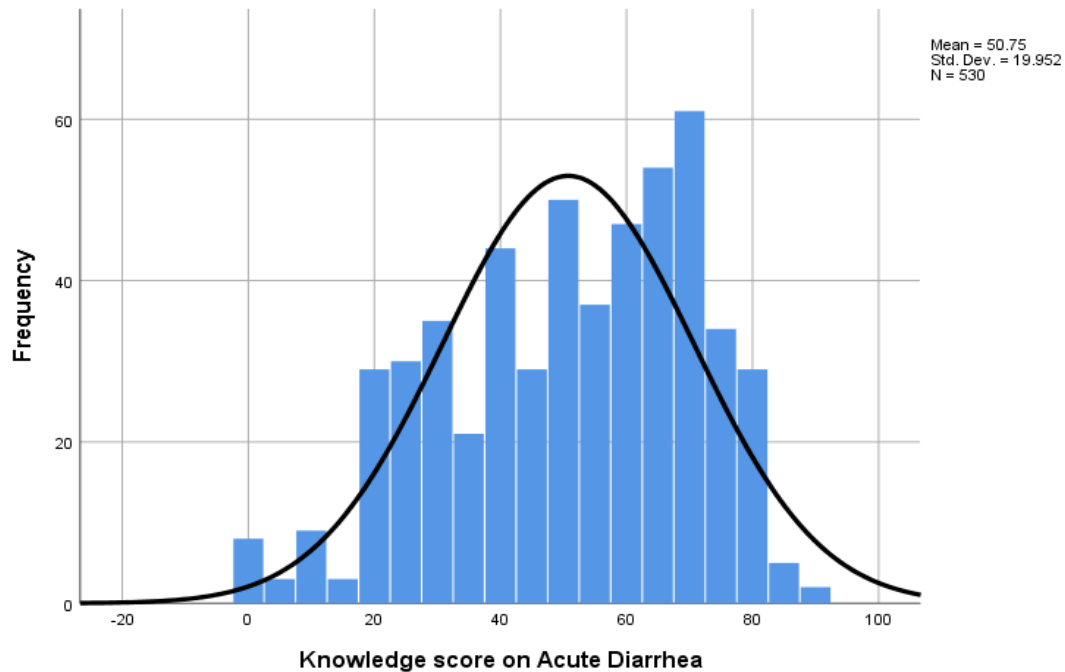


Figure19: Knowledge of acute diarrhoea mean score

#### 4.4.1.7 Factors influencing the parents'/caregivers' knowledge

An independent samples t-test was conducted to compare the mean score for knowledge between the availability of radio (yes) and (no) (Table 9). The results show a significant difference in the mean scores of knowledge between respondents who possessed a radio ( $M_Y = 53.37$ ,  $SD = 19.30$ ) and those who did not possess a radio ( $M_N = 44.97$ ,  $SD = 20.21$ ); ( $t(528) = 4.57$ ,  $p = 0.001$ , two-tailed). The magnitude of the difference in the means (mean difference = 8.40 with a 95% Confidence Interval varying between 4.79 and 12.01) was very large (*Eta Square* = 0.04). It can be concluded from the findings that those who own radios are more knowledgeable than those who do not own a radio. Equally, there is a significant difference in the level of knowledge about diarrhoea between respondents who were residents in the informal settlement and residents of rural areas ( $p=0.00$ ,  $p<0.005$ ). The mean score for parents/caregivers from the informal settlement was  $41.01 \pm 13.10$  SD, and for those from rural areas,  $423=53.15 \pm 20.66$  SD. It can also be concluded that parents/caregivers from rural areas are more knowledgeable than those that reside in informal settlements.

Table 9: Knowledge mean score related to parents'/caregivers' ownership of radio.

Characteristics	Ownership of radio		t	p-value*	Lower	Upper
	yes n= mean ± SD	no n= mean ± SD				
Knowledge score on Acute Diarrhoea	365=53.37±19.30	165= 44.97±20.21	4.57	0.001*	4.79	12.01
	<b>Residential area</b>					
	Informal settlement	Rural area				
	102=41.01±13.10	423=53.15±20.66	-5.66	0.001*	-16.35	-7.93
*p-value Pearson chi-square statistically significant 0.05						

#### 4.4.1.8 Relationship between knowledge, score with gender

Table 10 shows an independent samples t-test conducted to compare the mean score for knowledge scores with gender. The result shows that there was no significant difference in knowledge score for males (M = 44.43, SD =20.50) and female (M = 51.13, SD =19.38; t (528) =1.29, p=0.07 two-tailed).

Table 10: Knowledge mean score related to the gender of parents/caregivers

	Gender	Mean	SD	t	95% Confidence Interval of the Difference		p-value
					Lower	Upper	
Knowledge	Male	44.43	20.503	1.790	-.652	14.053	0.658
	Female	51.13	19.876				
*p-value Pearson chi-square statistically significant 0.05							

Table 11 presents logistic regression, which was performed to assess the impact of several factors that impacted the knowledge of parents/caregivers on the etiology, management,

and prevention of diarrhoeal disease in children under five. The model contained four independent variables (residential area, gender, marital status, and access to information (ownership of radio)). The full model containing all the predictors was statistically significant  $\chi^2$  (9, N=530) = 69.76,  $p < .001$ , indicating that the model could distinguish between the respondents with inadequate knowledge and those with adequate knowledge. The model explained between 27.1% (Cox and Sell R square) and 36.3% Nagelkerke R squared) of the variance in knowledge and correctly classified 64.3% of the cases. The results show that only two independent variables made a unique statistically significant contribution to the model (residential area and access to information such as radio ownership). The strongest predictor for knowledge was the place of residence, recording an odds ratio of 16.54. This indicates that parents/caregivers who were residents of the informal settlement were 16 times more likely to have inadequate knowledge than those from other residential areas. The odds ratio of 0.51 for having access to information or ownership of radio was less than 1, indicating that parents who owned a radio were 0.51 times less likely to be categorized as having inadequate knowledge, controlling for other factors in the model.

*Table 11: Logistic Regression-Factors associated with parents'/caregivers' knowledge*

Variable	Wald	df	Sig.	Exp (B)	95% C.I for Exp. B	
					Lower	Upper
Residential Area	19.65	2	0.01*			
Residential Area (1)	0.00	1	0.01*	16.54	0.00	.
Residential Area (2)	0.00	1	0.99	93.67	0.00	.
Gender (1)	2.59	1	0.11	0.431	0.15	1.20
Marital	0.89	4	0.93			
Marital (1)	0.15	1	0.70	1.09	0.70	1.70
Marital (2)	0.59	1	0.44	0.76	0.38	1.53
Marital (3)	0.00	1	0.99	0.00	0.00	.
Marital (4)	0.01	1	0.09	1.05	0.45	2.43
Access to information/ownership of radio (1)	8.22	1	0.01*	0.51	0.32	0.81

Variable(s) entered on step 1: Residential Area, Gender, Marital, Availability of Radio, children under five have suffered from diarrhoea in the past two weeks.

#### 4.4.1.8 Discussion

The study aimed to determine the level of knowledge amongst parents/caregivers of children under five on etiology, management, and prevention of acute diarrhoea in children. This included knowledge about the definition of diarrhoea, cause/contributing factors, treatment, and prevention. WHO/UNICEF, IMCI guideline was used as an assessment guide. Knowledge was found to be statistically significantly related to the age of the mother/caregiver ( $p < 0.05$ ). In addition, the study found knowledge related to diarrhoeal disease to be directly proportional to the parents'/caregivers' age group. Similar findings were reported in a conducted in Southern Odisha.<sup>(85)</sup> Nevertheless, females were found to be more knowledgeable 38.8%, compared to their male counterparts, possibly because the parents are mostly the caretakers of children.

Equally, there was a strong association between respondents' knowledge and place of residence, whereby the respondents from informal settlements tend to have lower knowledge compared to those from rural areas ( $p < 0.05$ ) (table 12). Although this could be a result of their level of education, respondents from a rural area in the current study had the highest percentage in the level of education, and the results were significant ( $p < 0.05$ ).

*Table 12: Parents/Caregivers' level of education related to the place of residence*

<b>Mother's/caregiver's education level</b>	<b>Urban n %</b>	<b>Informal settlement n %</b>	<b>Rural n %</b>	<b>Total n %</b>	<b>p-value</b>
Not educated	0 (0.0)	18 (21.2)	67 (78.8)	85 (16.0)	0.011*
Primary education	3 (1.2)	39 (15.9)	204 (82.9)	246 (46.4)	
Secondary education	1 (0.5)	45 (23.8)	143 (75.7)	189 (35.7)	
Higher education	1 (10.0)	0 (0.0)	9 (90.0)	10 (1.9)	
<b>Total</b>	5 (0.9)	102 (19.2)	423 (79.8)	530 (100.0)	

Marital status was found to be equally significant in association with knowledge about diarrhoeal disease ( $p < 0.05$ ). Studies conducted indicated that stable family situations related to good child health.<sup>(85)</sup>

#### *4.4.1.9 The knowledge of caregivers regarding cause/contributing factors, treatment, and prevention of diarrhoeal disease*

The study found that many parents/caregivers, 64% had inadequate knowledge of the prevention and management of acute diarrhoea; only a minority, 36%, had adequate knowledge. The findings are in line with other studies.<sup>(85,88)</sup> According to a survey conducted in Juba, South Sudan, most 62% had insufficient knowledge of preventing and managing diarrhoea in children. More than half of the respondents, 56.6% in the current study, knew the definition of diarrhoeal disease. Equally, more than 70% knew the causes of diarrhoeal disease. The findings were consistent with a study conducted in northwest of Nigeria whereby 89% of the respondents had a correct perception of the definition of diarrhoeal disease. More than 60% of the respondents knew the causes of diarrhoeal disease.<sup>(137)</sup> However, in the current study, only the minority, 21.5%, had the correct knowledge that viral infection causes diarrhoea.

Nevertheless, 40% of the respondents indicated that mother/father could be responsible for the occurrence of diarrhoea (**a common superstitious belief in the study area that parents can have skin tags at their perineal area that causes their children to develop diarrhoea if not removed**). Equally, 66.4% of the respondents had correct knowledge that malnutrition makes children more vulnerable to diarrhoeal disease. However, 24.3% of the parents/caregivers agreed that a child could develop malnutrition if the mother has multiple sexual partners. (**a common belief that if a mother is breastfeeding, cannot have a love relationship with a man who is not the child's father or otherwise the child will become ill**). The findings mentioned above align with results from a study conducted in the rural district of northern KwaZulu Natal in South Africa related to local beliefs about childhood diarrhoeal disease. The study reported that residents strongly believed that unborn and young nursing infants could become sick if their parents stepped over evil tracks and that maternal breaching of social taboos can provoke the displeasure of the ancestor's leading to the child becoming sick.<sup>(138)</sup> Regarding the management of diarrhoeal disease, only 38.7% agreed that it is necessary to give extra fluids.

Nevertheless, 75% agreed that fluids should be given more than usual, and 73% agreed that ORS treats diarrhoea. However, 24.5% indicated that if a child has diarrhoea mother has to stop breastfeeding the baby.<sup>(139)</sup> In addition, 10% of the respondents agreed upon giving fruit juice sweetened tee or cool drink, and a majority, 63.6%, agreed with giving antidiarrheal medications. The findings were consistent with the study conducted in an emergency pediatric hospital in Khartoum, Sudan. It was found that during diarrhoeal attacks, parents did not increase the amount of fluid intake or breastfeeding, and they used antibiotics without medical advice.<sup>(92)</sup>

More than 60% of the respondents knew the danger signs that require a child with diarrhoea to be taken to the nearest healthcare facility. The findings align with a study conducted in Southern Odisha whereby 58% of the respondents knew the risk factors of diarrhoea.<sup>(81)</sup>

The majority of the respondents, 84.3% and 82.3% agreed that hand washing with soap and food hygiene prevent diarrhoea. However, 26.6%, 49.6%, and 24.2% agreed that remaining faithful with one's partner, parents to go for perineal cutting, and prayers can prevent diarrhoea.

More than half, 68.9% of the respondents, indicated ownership of radio compared to a television 10.9%. Ownership of radio was significantly associated with knowledge; the study has shown that respondents who own a radio had better knowledge about the diarrhoeal disease than their counterparts because of access to information (table 6). The results show a significant difference in the mean scores of knowledge between participants who possessed a radio ( $M_Y = 53.37$ ,  $SD = 19.30$ ) and those who did not possess a radio ( $M_N = 44.97$ ,  $SD = 20.21$ ); ( $t(528) = 4.57$ ,  $p = .001$ , two-tailed). According to a study conducted among children attending the under-five clinic in Fagita Lekoma, Northwest Ethiopia, parents/caregivers who owned a radio or television were reported to have good knowledge about diarrhoea and to know more about home management of diarrhoea.<sup>(80)</sup> The Namibian study focused on a specific rural area of the Ohangwena region. For broader information, it will be necessary to assess the knowledge, beliefs, and practices in other regions in the country, including more urban settlements. Further studies could be beneficial for determining the extent and effects of specific patterns of conceptual discrepancies in various settings.

#### **4.4.2 Parents' or caregivers' attitudes on the cause, management, and prevention of diarrhoea in children under five in Engela District in Oshana Region, Namibia**

The study population included parents or caregivers (women and men) who resided in households with children aged between 1 month and 59 months and were residents in the Engela district for at least one year or more. Only parents or caregivers who were direct caregivers of children under five were selected from each household to participate in the study. A total of 530 parents/caregivers participated in the study.

In this study, the outcome variable was the parents'/caregivers' attitude toward the diarrhoeal disease. Descriptive statistics and inferential statistics were used to summarize the study results. On the other hand, socio-demographic factors such as residential area, employment status, average monthly income, ownership of radio and television, and parent's/caregiver's age, gender, and educational status are exposure variables.

Descriptive statistics were used to summarize the data, presented as frequency distribution tables consisting of frequencies, percentages, and 95% confidence interval levels. Furthermore, attitudes were related to socio-demographic characteristics. The chi-square ( $\chi^2$ ) test was used to test for the statistical relationship between attitude and socio-demographic characteristics, which was analyzed at the bivariate level. In addition, bivariate analysis was used to determine associations between levels of attitudes to determine P-values and odds ratios. Demographic characteristics significant to a p-value less than 0.5 were further analyzed using binary logistic regression; a 95% confidence interval was set for all statistical procedures.

Attitudes analysis was quantified as positive/negative. The attitude significant variables included perceptions of causes of diarrhoea (6 points), perceptions of treatment of diarrhoea (4 points), and perceptions of prevention of diarrhoea (5 points). Attitudes regarding diarrhoeal disease were assessed using statements on a 5-point Likert scale: Strongly agree, agree, neither agree nor disagree, disagree and strongly disagree out of 15. Correct answers were given a score 1 and a wrong 0 (Table 13). Each participant who scored 70% and above was classified as having a positive attitude, and those who scored below 70% were classified as having a negative attitude.

The levels of attitude were compared to socio-demographic characteristics and analysed at the bivariate level. In addition, bivariate analysis was used to determine associations between levels of attitudes to determine P-values and odds ratios. Demographic characteristics significant to a p-value less than 0.5 were further analyzed using logistic regression analysis to determine the association.

#### 4.4.2.1 Parents/caregivers' attitude on the cause, management, and prevention of diarrhoea in children under five

Figure 21 presents attitudes scores obtained by parent/caregiver related to cause/contributing factors, treatment, and prevention of diarrhoeal disease in children under five. The total score for attitude questions was 15. The mean score of respondents' attitudes was 61.17 (SD=15.19), and the score range was 0-93%. The distribution was significantly skewed towards negative (skewness=-.987, SE skew = 0.11), with the score clustering around higher values.

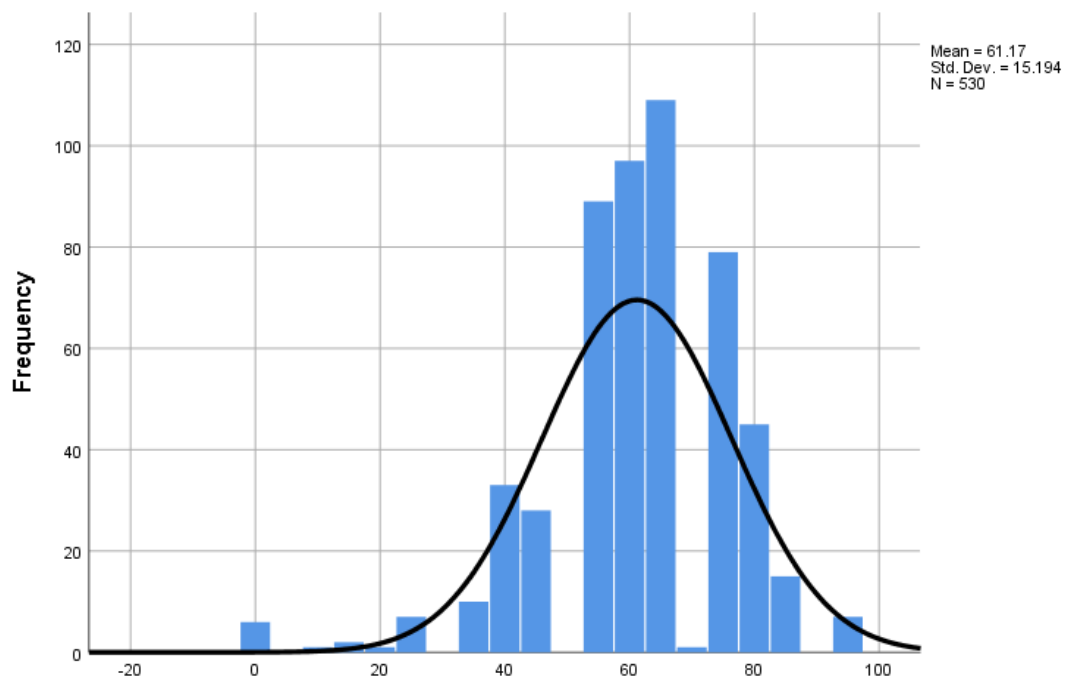


Figure20: Attitude mean scores

Table 13 shows the results of the attitude attribute related to the occurrence of diarrhoea among children under-five: **Causes/contributions to the development of diarrhoeal disease**, 43% of the respondents indicated that they agree that diarrhoea can be caused by witchcraft and the evil eye. Equally, the majority, 42%, agreed that maternal and parental-

related factors could contribute to the development of diarrhoeal disease in children under five (**believing that parents can have a skin tag at the perineal area that is believed to contribute to a child's development diarrhoea**). Likewise, parents verbalized during FGDs that skin tagging parents' perineum can contribute to diarrhoea.

*“The tail “omushila” at the parent’s anus causes the child to develop diarrhoea, but it comes out and goes inside again; when it comes out, the child becomes sick, but the child is ok when the tail is inside the rectum. The tail is like a tortoise tail, but it is not very common; the skin (oshipa) is very common, as well as “eemhalo” (small papules found around the vagina). P4: M/C- FGD4*

Furthermore, it was also indicated that children could possess themselves or have other possessions and develop diarrhoeal disease.

*“The children possess themselves if they have papules on the insides of their cheeks. The treatment for such; the child is taken to those who knows those things very well; they check in the child's mouth to determine if the child has papules that make them develop diarrhoea.”. P4: HEW; FGR2*

*“My child had diarrhoea, and on top of that, was not feeling well. When I took the child to the traditional healer, the traditional healer told me that the spirits of the grandparents possessed the child. P2: M/C-FGD4*

Nevertheless, 49.4% agreed that teething causes diarrhoea and 44.7% of respondents agreed that pregnant breastfeeding causes diarrhoea. Nevertheless, 47% of respondents agreed that human faeces are a source of diarrhoea. However, 39.6% of respondents agreed that diarrhoea attacks mostly bottle-fed children.

**Treatment of diarrhoeal disease in children under five.** 20% of the respondents strongly disagree that chronic diarrhoea in children is treated with western medicine, and 43% of respondents strongly agree that it is important to continue breastfeeding when a child has diarrhoea.

Nevertheless, 16% of the respondents agreed that prayers are powerful and can cure a child with diarrhoea, 11.9% strongly agree that prayers can cure a child suffering from diarrhoeal disease. 33.6% of respondents agreed that liquid food aggravates diarrhoea. It

emerged from the FGD that diarrhoea could be managed by a parent undergoing perineal cutting. *“I just want to say that we believe in children being possessed by parents and that we need to go for perineal cutting for the child to be able to improve. After being trained, I think that we develop tails due to constipation; like myself, I take warm water and sit in a bath to prevent the tail from developing around my anus”*. P1: HEW-FGR7

**Prevention of diarrhoeal disease**, most respondents, 45.8%, agree, and 31.5% strongly think that diarrhoea can be prevented through immunization. Similarly, 54% of the respondents strongly agree that hand-washing with soap and water prevents diarrhoea. However, 14.2% of respondents agree, and 11.3% strongly agree that hand washing should only be done when enough water is available. Nonetheless, 20.9% disagree that child/infant faeces are hazardous to health. Lastly, 41.3% of respondents agreed, and 40.4% strongly agreed that diarrhoea in children under five is a problem in the community.

*Table 13: Questions on attitude related to diarrhoeal disease*

Variable	Strongly agree Frequency (%)	Agree Frequency (%)	Neither agree nor disagree Frequency (%)	disagree Frequency (%)	Strongly disagree Frequency (%)
<b>Perceived Causes of diarrhoea</b>	<b>N: 59.8%</b>				
Diarrhoea is caused by witchcraft and evil eye	228 (43.0%)	129 (33.8%)	12 (2.3%)	58 (10.9%)	48 (9.1%)
Maternal and parental-related factors (eemhalo) can contribute to a child developing diarrhoea	172 (32.5%)	223 (42.1%)	12 (2.3%)	63 (11.9%)	60 (11.3%)
Teething causes diarrhoea	225 (42.5%)	262 (49.4%)	17 (3.2%)	19 (3.6%)	7 (1.3%)
Breastfeeding when pregnant causes diarrhoea	211 (39.8%)	237 (44.7%)	15 (2.8%)	41 (7.7%)	26 (4.9%)
Human faeces are a source of diarrhoea	195 (36.8%)	249 (47.0%)	13 (2.5%)	51 (9.6%)	22 (4.2%)
Diarrhoea attacks mostly bottle-fed children	186 (35.2%)	210 (39.6%)	15 (2.8%)	78 (14.7%)	41 (7.7%)
<b>Perceived Treatment</b>	<b>N: 39.2%</b>				

Chronic diarrhoea in children is treated with western medicine	126 (23.8%)	167 (31.5%)	28 (5.3%)	103 (19.4%)	106 (20.0%)
It is important to continue breastfeeding when a child has diarrhoea	228 (43.0%)	179 (33.8%)	17 (3.2%)	58 (10.9%)	48 (9.1%)
Prayers are powerful and can cure a child with diarrhoea	63 (11.9%)	85 (16.0%)	14 (2.6%)	159 (30.0%)	209 (39.4%)
Liquid food aggravates diarrhoea	128 (24.2%)	178 (33.6%)	17 (3.2%)	119 (22.5%)	88 (16.6%)
<b>Prevention</b>					<b>N: 23.8%</b>
Diarrhoea can be prevented through immunization/vaccination	167 (31.5%)	243 (45.8%)	17 (3.2%)	72 (13.6%)	31 (5.8%)
Hand washing with soap prevents diarrhoea	286 (54.0%)	214 (40.4%)	13 (2.5%)	7 (1.3%)	10 (1.4%)
Hand washing should be done only when enough water is available	60(11.3%)	75 (14.2%)	18 (3.4%)	205 (38.7%)	172(32.5%)
Child's/infant faeces are hazardous to health	138 (26.0%)	172 (32.5%)	22 (4.2%)	111 (20.9%)	87 (16.4%)
Diarrhoea is a problem in the community	214 (40.4%)	219 (41.3%)	18 (3.4%)	50 (9.4%)	29 (5.5%)

Mean score 61.17

(SD=15.19)

Skewness-0.987

SE skew = 0.11

Variance=230.87

Approximately 28% of respondents were categorized as having a positive attitude towards the cause, treatment, and prevention of diarrhoeal disease. On the other hand, the majority, 72.3%, were classified as having a negative attitude (Figure 22).

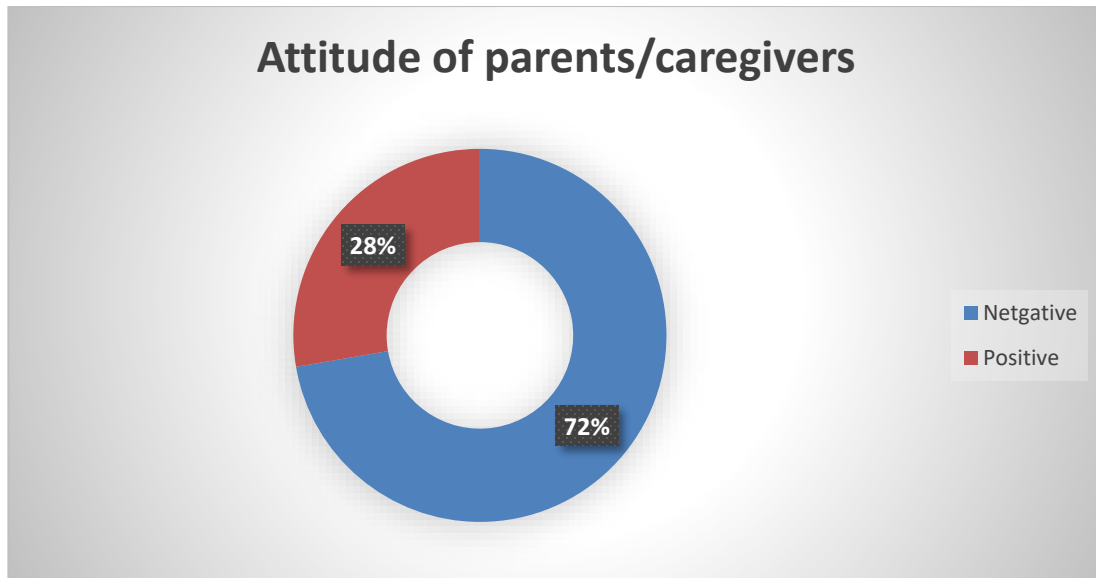


Figure21: Parents'/Caregivers' attitude related to diarrhoea among children under five

#### 4.4.2.2 Socio-demographic characteristics of respondents related to attitude regarding acute diarrhoea in children under five

Table 14 below presents the socio-demographic characteristics related to the parents'/caregivers' attitudes towards diarrhoeal disease in children under five. 530 parents/caregivers took part in the study. The mean age was 40 years (SD=8.38). The largest proportion of the respondents, 29.4%, were aged between 18-30 years, and 26.4% were between 31-40 years. Equally, the negative attitude was reported to be high among the respondents aged 31-40 74.3% and group 18-31 72.4%. However, the difference observed was not statically significant. Most of the respondents, 94.3%, were females; however, 80% of males were reported to have a high negative attitude compared to females (71.8%); nevertheless, the observed difference was not significant. Many respondents, 79.8%, were from rural areas; however, a significant proportion, 97.1%, of respondents from the informal settlement were categorized as having a negative attitude. The observed difference was statistically significant ( $p < 0.05$ ). The respondents' education level was low, only 1.6% had attended high education, and 78.8% of the respondents had never attended school. Similarly, 78.8% of the respondents who did not attend school were categorized as having negative attitudes. Nevertheless, the observed difference was not statistically significant. More than half of the participants, 68.9%, indicated ownership of

the radio. Yet, 84.5% of the participants who did not own a radio were categorized as having a negative attitude. Radio ownership was found to be significantly associated with the respondents' attitudes ( $p < 0.05$ ). The prevalence of diarrhoea in the study area was reported to be 23.8%. Nevertheless, respondents classified as having a negative attitude reported the majority 78.6% of diarrhoea prevalence among children under five; however, the observed difference was not statistically significant. Based on the current study's findings, 66.8% of children under five were undernourished; nevertheless, undernutrition was not associated with the mother/caregiver attitude towards the diarrhoeal disease. More than half of the respondents were Protestants, 53.8%. Many of the parents/caregivers whose religion was protestant, 51.2%, were categorized as having a negative attitude. However, the observed difference was not statistically significant.

*Table 14: Socio-demographic characteristics of the parents/caregivers related to attitude scores*

<b>Variable</b>	<b>Negative attitude n (%)</b>	<b>Positive attitude n (%)</b>	<b>Total n (%)</b>	<b>p-value*</b>
<b>Mother's/caregiver's age</b>				0.371
18 - 30	113 (72.4%)	43 (27.6%)	156 (29.4%)	
31 - 40	104 (74.3%)	36 (25.7%)	140 (26.4%)	
41 - 50	87 (69.6%)	38 (30.4%)	125 (23.6%)	
51 - 60	50 (79.4%)	13 (20.6%)	63 (11.9%)	
> 60	29 (63.0%)	17 (37.0%)	46 (8.7%)	
<b>Mother's/caregiver's gender</b>				0.330
Male	24 (80.0%)	6 (20.0%)	30 (5.7%)	
Female	359 (71.8%)	141 (28.2%)	500 (94.3%)	
<b>Area of residence</b>				0.001*
Urban	3 (60.0%)	2 (40.0%)	5 (0.9%)	
Informal settlement	99 (97.1%)	3 (2.9%)	102 (19.2%)	
Rural areas	281 (66.4%)	142 (33.6%)	383 (79.8%)	

<b>Mother's/caregiver's education level</b>				0.491
Not educated	67 (78.8%)	18 (21.2%)	85 (16.0)	
Primary education	177 (72.02%)	69 (28.0%)	246 (46.4%)	
Secondary education	132 (69.8%)	57 (30.2%)	189 (35.7%)	
Higher education	7 (70.0%)	3 (30.0%)	10 (1.9%)	
<b>Ownership of radio</b>				0.001*
Yes	244 (66.8%)	121 (33.2%)	365 (68.9%)	
No	139 (84.2%)	26 (15.2%)	165 (31.1%)	
<b>Prevalence of diarrhoea</b>				0.076
<b>Yes</b>	99 (78.6%)	27 (21.4%)	126 (23.8%)	
<b>No</b>	284 (70.3%)	120 (29.7%)	404 (76.2%)	
<b>Prevalence of malnutrition</b>				0.708
Under nutrition	254 (71.8%)	100 (28.2%)	354 (66.8%)	
No-under nutrition	129 (73.3%)	47 (26.7%)	176 (32.2%)	
<b>Religion</b>				0.241
Protestant	196 (51.2%)	89 (60.5%)	285 (53.8%)	
Catholic	57 (14.9%)	16 (10.9%)	73 (13.8%)	
Anglican	117 (30.5%)	39 (26.5%)	156 (29.4%)	
Other	13 (3.4%)	3 (2.0%)	16 (3.0%)	
<b>Monthly income</b>				0.008*
±200-2000.00N\$	364 (73.7)	130 (26.3)	494 (93.2)	
>2000-5000.00N\$	14 (53.8)	12 (46.2)	62 (4.9)	
>5000-10000.00N\$	1 (20.0)	4 (80.0)	5 (0.9)	
>10000.00N\$	4 (80.0)	1 (20.0)	5 (0.9)	
<b>TOTAL</b>	<b>383 (72.3%)</b>	<b>147 (27.7%)</b>	<b>530 (100%)</b>	

\*p-value Pearson chi-square statistically significant 0.05

#### 4.4.2.3 Factors influencing the caregiver's/parent's attitude

Logistic regression analysis of attitude-related factors associated with the diarrhoeal disease among children under five in the Engela District was performed to assess the likelihood of factors that impact the prevalence of diarrhoea. The model containing all the predictors was statistically significant  $\chi^2$  (20, N=530) = 75.89,  $p < .001$ ; this is an indication that the model was able to distinguish between parents/caregivers who had positive attitudes and those who had a negative attitude. The model explained between 13.3% (Cox and Sell R square) and 19.3% Nagelkerke R squared) of the variance in attitude and correctly classified 72.5% of the cases. According to the results in Table 3, five independent variables made a unique statistically significant contribution to the model (knowledge about diarrhoeal disease, mother/caregiver age group, ownership of radio, residential area, and parent/caregiver education level). The strongest predictor of attitude was parent/caregiver residential (informal settlement), recording an odds ratio of 21.92. This indicates that parents/caregivers in informal settlements are twenty-one times more likely to have a negative attitude than those in rural areas. And the level of education recorded an odds ratio of 15.77. It indicated that those who had no education were fifteen times more likely to have a negative attitude than the rest of the group. The odds ratio of 0.63 for knowledge about diarrhoeal disease was less than 1. This indicates that 63% of parents/caregivers were less likely to have a negative attitude for every increase in knowledge scores, controlling for other factors in the model (Table 15).

*Table 15: Logistic Regression -Attitude related factors associated with diarrhoea in children*

Variable	Wald	df	Sig.	Exp(B)	95% C.I for Exp.B	
					Lower	Upper
Knowledge score category on Acute Diarrhoea (1)	4.57	1	0.03*	0.63	.42	.96
Parents/caregivers age category	5.29	4	0.26			

Parents/caregivers category (1)	age	1.05	1	0.31	1.59	.65	3.88
Parents/caregivers category (2)	age	1.00	1	0.32	1.56	.65	3.75
Parents/caregivers category (3)	age	.86	1	0.35	1.47	.64	3.44
Parents/caregivers category (4)	age	4.77	1	0.03*	2.92	1.12	7.61
Availability of Radio (1)		4.20	1	0.04*	1.72	1.02	2.89
Residential Area		16.60	2	0.00*			
Residential Area (1)		6.70	1	0.01*	21.92	2.12	227.28
Residential Area (2)		.30	1	0.59	1.73	.24	12.45
Gender (1)		.43	1	0.51	1.36	.55	3.35
Religion		1.40	4	0.85			
Religion (1)		.92	1	0.34	1.88	.52	6.86
Religion (2)		.30	1	0.59	1.46	.38	5.67
Religion (3)		.57	1	0.45	1.66	.45	6.15
Religion (4)		.00	1	1.00	.000	.00	.
Education Level of parents/caregivers		11.36	3	0.01*			
Education Level of parents/caregivers (1)		5.66	1	0.01*	15.77	1.63	152.90
Education Level of parents/caretakers (2)		3.41	1	0.07	8.15	.88	75.63
Education Level of parents/caregivers (3)		2.52	1	0.11	6.12	.65	57.25

a. Variable(s) entered on step 1: Knowledge, Diarrhoea \_Index, parent/caregiver age category, Ownership of radio, Residential Area, Gender, Religion, Education Level of parent/caregiver

#### *4.4.2.4 Discussion*

This study indicated that the majority, 72%, had a negative attitude related to the causes, treatment, and prevention of diarrhoea. The findings are concurrent with the results from a study conducted among school-going children and their parents in rural Maharashtra, which reported that attitude and practice regarding diarrhoeal disease were very poor.<sup>(46)</sup>

**Causes/contributions to the development of diarrhoeal disease**, 43% strongly agree, and 33.8% agreed that diarrhoea could be caused by witchcraft and the evil eye. Equally, 32.5% strongly agreed, and 42% agreed that maternal and parental-related factors could contribute to the development of diarrhoeal disease in children under five. **(a common belief in the region is that parents can have a skin tag at the perineal area that contributes to developing diarrhoea in children under five if not cutaway)**. However, it is reported that traditional approaches to managing diarrhoea, such as cutting parents in Namibia's anal and vaginal areas, have no beneficial effects on the child or the mother's motivation to seek medical treatment.<sup>(58)</sup>

Nevertheless, 42.5% strongly believed, and 49.4% agreed that teething causes diarrhoea equally, 39.8% strongly agreed, and 44.7% agreed that breastfeeding when pregnant causes diarrhoea. Based on a study conducted in an emergency pediatric hospital in Khartoum, Sudan, 95.7% of parents thought teething causes diarrhoea.<sup>(23)</sup> Equally related to a survey conducted in Southwest Ethiopia on the prevalence of stunting and associated factors, significant factors related to stunting were stopping breastfeeding due to a child's preceding birth interval of less than 24 months and inappropriate feeding.<sup>(140)</sup> However, 36.8% strongly agreed, and 47% agreed that human faeces are a source of diarrhoea. Similarly, 35.2% strongly agreed, and 39.6% agreed that diarrhoea attacks mostly on bottle-fed children.

**Treatment of diarrhoeal disease in children under five.** Twenty percent of the respondents strongly disagree that chronic diarrhoea in children is treated with western medicine. The findings are in line with the conclusions of a study conducted emergency pediatric hospital in Khartoum, Sudan 30.9% of parents used traditional methods, and 16% gave self-remedies.<sup>(92)</sup> However, 43% of respondents strongly agree that it is important to continue breastfeeding when a child has diarrhoea. On the contrary, according to a study conducted in Mirzapur, rural Bangladesh, on health-seeking

behaviour, only 0.4% indicated that breastfeeding effectively prevents childhood diarrhoea.<sup>(42)</sup> Nonetheless, 33.6% of respondents agreed that liquid food aggravates diarrhoea.

16% of the respondents agreed that prayers are powerful and can cure a child with diarrhoea, and 11.9% strongly agreed that prayers can cure a child suffering from diarrhoeal disease.

**Regarding the prevention of diarrhoeal disease,** the largest proportion of respondents, 45.8%, agree, and 31.5% strongly agree that diarrhoea can be prevented through immunization. Similarly, 54% of the respondents strongly agree that hand washing with soap and water prevents diarrhoea. However, 14.2% of respondents agree, and 11.3% strongly agree that hand washing should only be done when enough water is available. Nonetheless, 20.9% disagree that child/infant faeces are hazardous to health. According to a study conducted in Mirzapur, rural Bangladesh, it is reported that 49.5 % and 7.7% cited washing hands and proper disposal of human waste to be effective measures for preventing childhood diarrhoea.<sup>(3,141)</sup> Lastly, 41.3% of respondents agree, and 40.4% strongly agree that diarrhoea in children under five is a problem in the community.

In the current study, factors such as residential area, radio ownership, and monthly income were significantly associated with attitude  $p < 0.05$ . Mass media such as radio and television are reported to have successfully brought health-related messages to individuals and families aiming to prevent diarrhoeal disease.<sup>(58)</sup>

Based on logistic regression analysis shown in Table 15, factors such as knowledge about diarrhoeal disease, parent/caregiver age group, radio ownership, residential area, and parent/caregiver education level were analysed. The strongest predictor was informal settlement residential area recording an odds ratio of 21.92, and parent/caregiver not being educated, recording an odds ratio of 15.77. This indicates that parents/caregivers who were residents in informal settlements were twenty-one times more likely to have a negative attitude than residents in rural areas. And parents/caregivers with lower education were 15 times more likely to have a negative attitude. The odds ratio of .63 for knowledge about diarrhoeal disease was less than one. This indicates that with an increase in knowledge, 63% of parents/caregivers were less likely to be categorised as having a negative attitude, controlling for other factors in the model

#### **4.4.3 Parents' or caregivers' health-seeking practices regarding prevention and management of diarrhoea among children under five in Engela District in Ohangwena Region, Namibia**

A structured questionnaire was used to collect data from the parents or caregivers. There were 30 "yes" or "no" practice questions; the variables for practice included: the practice of perineal cutting, faith healing for treatment and prevention of diarrhoea, the time frame taken before taking a child to the healthcare facility, what parent/caregiver does when a child has persistent diarrhoea, what is used for hand washing, when to practice hand washing, what is used to make water safe to drink, how frequent is a child washed and how leftover food is stored. The completed questionnaire had been coded on pre-arranged coding sheet by the principal investigator to minimize errors. Data were checked for completeness before data entry. International Business Machines (IBM) Statistical Package for Social Science (SPSS) software version 24 to perform was used for data analysis. In this study outcome variable was the practices of the parents/caregivers on diarrhoeal disease. Descriptive statistics and inferential statistics were used to summarize the study results. Descriptive statistics were used to summarize the data presented as frequency distribution tables, consisting of frequencies, percentages, and 95% confidence intervals. The statistical relationship between socio-demographic characteristics and practice was done by using the chi-square ( $\chi^2$ ) test. A p-value equal to or less than 0.05 was considered statistically significant. The levels of practice were related to socio-demographic characteristics and analyzed at the bivariate level. In addition, binary logistic regression was used to determine factors' associations with practice.

The study population included parents/caregivers (women and men) who resided in households with children under five aged 1-59 months and who were residents in the Engela district for at least one year or more.

##### ***4.4.3.1 Socio-demographic characteristics of parents/caregivers of children under five related to practices***

A total of 530 parents or caregivers of children under the age of five participated in the study. Table 16 below shows the socio-demographic characteristics of parents/caregivers

related to practice in managing and preventing diarrhoeal disease among children under five. The age group, 41-50 years, was found to have the highest scores, 9.6% of good practice, compared to the other groups. Nevertheless, the age group 51-60 years had the highest moderate practice, 60.4%, compared to other age groups. Moreover, the observed difference was statistically significant ( $p>0.05$ ).

More than half of the males, 56.7%, were categorized as having poor practice as compared to female respondents, 38.8%. Nevertheless, the observed difference was not statistically significant. Majority of respondents classified as having poor practice were from an informal settlement. On the other hand, most participants, 9.5% categorized as having good practice, were from rural areas. Nonetheless, the observed difference was statistically significant ( $p>0.05$ ). Furthermore, respondents with secondary education had the highest good practice scores, 48.8%, compared with those without education, 14.6%. Thus, the level of education was found to be significantly associated with practice scores ( $p>0.05$ ).

Respondents who reported owning radios were found to have better practice scores (9.5% good and 57.3% moderate practice) than those who indicated that they do not own a radio (3.6% good and 41.8% moderate). Thus, owning a radio was found to be significantly associated with practice scores. Similarly, of children reported to have suffered from diarrhoea, 44.4% and 29.4% belonged to parents/caregivers who were categorized as having moderate and poor practice, respectively. Furthermore, diarrhoea prevalence was significantly related to practice.

Based on the current study, monthly income did not play any significant role related to practice.

Table 16: Scio-demographic characteristics of the parents/caregivers related to practice scores

Variable	Good practice n (%)	Moderate practice n (%)	Poor practice n (%)	Total n (%)	p-value*
<b>Mother's/caregiver's age</b>					0.032*
18 - 30	9 (5.8%)	87 (55.8%)	60 (38.4%)	156 (29.4%)	
31 - 40	11 (7.9%)	68 (48.6%)	61 (43.5%)	140 (26.4%)	
41 - 50	12 (9.6%)	60 (48.0%)	53 (42.4%)	125 (23.6%)	
51 - 60	5 (7.9%)	38 (60.4%)	20 (31.7%)	63 (11.9%)	
> 60	4 (8.7%)	25 (54.3%)	17 (37.0%)	46 (8.7%)	
<b>Mother's/caregiver's gender</b>					0.148
Male	2 (6.7%)	11 (36.7%)	17 (56.7%)	30 (5.7%)	
Female	39 (7.8%)	267 (53.4%)	194 (38.8%)	500 (94.3%)	
<b>Residential</b>					0.001*
Urban	0 (0.0%)	2 (40.0%)	3 (60.0%)	5 (0.9%)	
Informal settlement	1 (1.0%)	28 (27.5%)	73 (71.6%)	102 (19.2%)	
Rural areas	40 (9.5%)	248 (58.6%)	135 (31.9%)	423 (79.8%)	
<b>Mother's/caregiver's education level</b>					0.005*
Not educated	6 (14.6%)	32 (11.2%)	47 (22.3%)	85 (16.0%)	
Primary education	15 (36.6%)	137 (49.3%)	94 (44.5%)	246 (46.4%)	
Secondary education	20 (48.8%)	100 (36.0%)	69 (32.7%)	189 (35.7%)	
Higher education	0 (0.0%)	9 (3.2%)	1 (0.5%)	10 (1.9%)	
<b>Ownership of radio</b>					0.001*
Yes	35 (9.5%)	209 (57.3%)	121 (33.2%)	365 (68.9%)	
No	6 (3.6%)	69 (41.8%)	90 (54.5%)	165 (31.1%)	
<b>Prevalence of diarrhoea in under-five</b>					0.047*
Yes	8 (19.5%)	56 (44.4%)	62 (29.4%)	126 (23.8%)	
No	33 (8.1%)	222 (55.0%)	149 (36.9%)	404 (76.2%)	
<b>Monthly income</b>					0.414
190-2000.00N\$	39 (7.9)	254 (51.4)	201 (40.7)	494 (93.2)	
>2000-5000.00N\$	2 (7.7)	18 (69.2)	6 (23.1)	26 (4.9)	
>5000-10000.00N\$	0 (0.0)	4 (80.0)	1 (20.0)	5 (0.9)	
>10000.00N\$	0 (0.0)	2 (40.0)	3 (60.0)	5 (0.9)	
<b>TOTAL</b>	<b>41 (8.0)</b>	<b>278 (52.0)</b>	<b>211 (40.0)</b>	<b>530 (100)</b>	

\*p-value Pearson chi-square statistically significant 0.05

#### 4.4.3.2 Level of practices of caregivers or parents on management and prevention of diarrhoea

The practice was measured with 30 items, "true or "false" questions related to managing and preventing diarrhoeal disease. The correct responses related to appropriate practice were given 1 point, while wrong answers were given 0. The total score was converted into a percentage. Based on the total scores, the practice was graded as good, moderate, and poor. For example, good practice was labelled when respondents scored 75%≤, moderate practice when respondents scored 50-74%, and poor practice when they scored 0-49%.

Based on the answers provided, only a small percentage, 8%, were categorized as having good practice. Nevertheless, slightly more than half of the respondents, 52%, were classified as having moderate practice. However, 40% of the respondents were categorized as having poor practices (Figure 23). Table 18 presents practices related to diarrhoea management and prevention and respondents' scores.

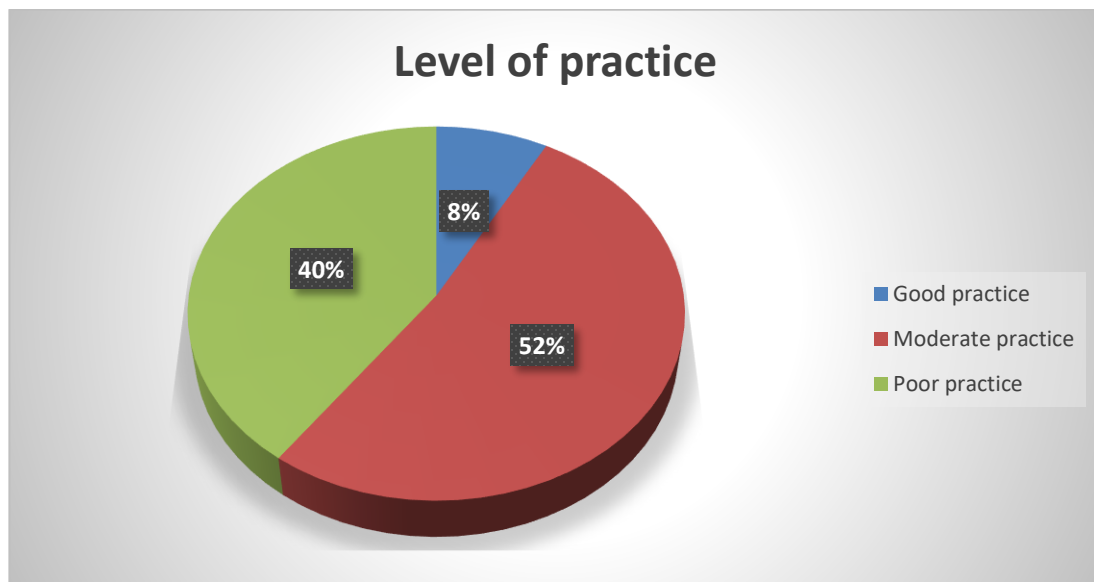
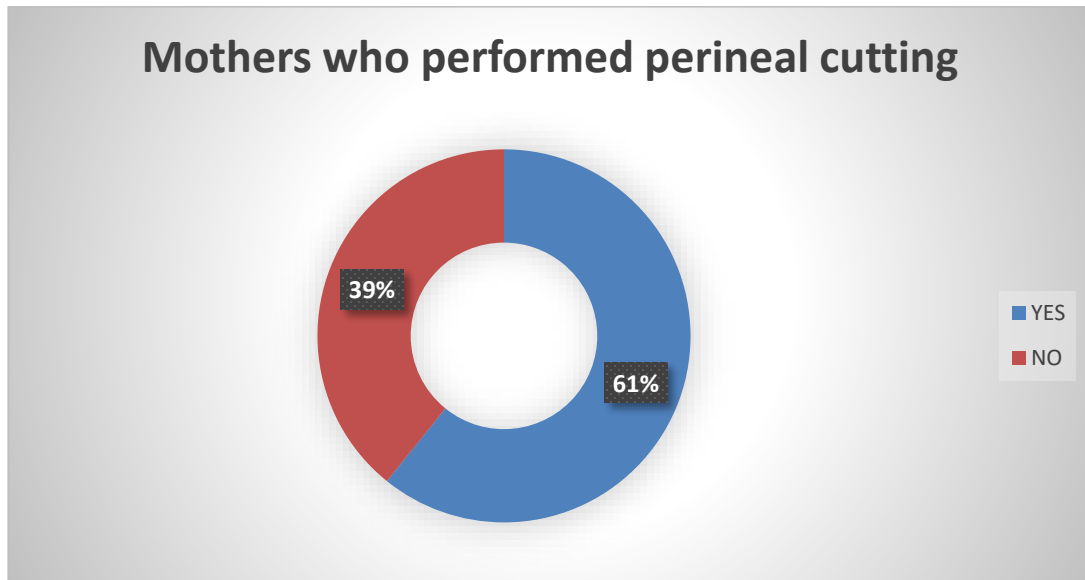


Figure22: Level of practice scores

#### 4.4.3.3 Practices of caregivers or parents on the management of diarrhoea in general

The variables for managing diarrhoeal disease included the practices of perineal cutting and faith healing for treating and preventing diarrhoea, the time frame taken before taking a child to the healthcare facility, and what the mother/caregiver does when the child has persistent diarrhoea. Related to managing diarrhoeal disease, most respondents, 61.0%,

indicated that they practice perineal cutting as part of managing the diarrhoeal disease. During FGDs interviews with HEWs it was indicated parents go to traditional healers for perineal cutting. *“They go to traditional healers when the child is suffering from diarrhoea and vomiting, believing that the parents possess the child, and the parents go for perineal cutting, that is very common.”* P3: HEW-FGD2



*Figure 12: Performance of perineal cutting as part of management of diarrhoeal disease*

Furthermore, those who agreed that they practice perineal cutting were requested to indicate the number of times they recall practising perineal cutting for a child who suffered from diarrhoea. The number of times being cut ranged from 0-21 times. Furthermore, 4.7% indicated taking children for prayers as part of treating diarrhoea.

*Table 17: Practice of perineal cutting related to treatment and prevention of diarrhoeal disease*

<b>Variable</b>	<b>Frequency</b>	<b>Percentage (%)</b>
<b>Indicate the number of times you went for perineal cutting</b>		
1-3	232	43.8
4-6	76	14.3
7-9	8	1.5
10>	5	0.9
<b>TOTAL</b>	<b>321</b>	<b>60.5</b>

Regarding the appropriate time to take a child with simple diarrhoea to the hospital, the majority, 62.6%, indicated that they do it within less than one day of onset. Nonetheless, 45.3% considered the correct answer to be within one day of commencement. Furthermore, based on the question that asks “what one should do when a child has persistent diarrhoea”, the majority, 88.1%, indicated that a child should be taken to hospital. However, besides bringing the child to the hospital, 39.2% also indicated that the mother should go for a perineal cutting, 36.2% indicated that the father should go for a perineal cutting, and 42.1% indicated that both parents should go for a perineal cutting, 21.9% indicated that the baby should be taken for traditional healing.

#### ***4.4.3.4 Practices of caregivers or parents on prevention of diarrhoeal disease in general***

On the other hand, prevention questions included: what is used for hand washing, when to practice hand washing, what to use to make water safe to drink, how frequently a child is washed, and how leftover food is stored. Most participants, 88.1%, indicated washing hands after using a toilet. Nevertheless, 57.9% indicated washing hands only when enough water is available. A majority, 75.3%, indicated that they boil water to drink it; similarly, 81.5% indicated that they wash their children daily; however, the least 6.8% indicated that they wash their children only when they are dirty. Regarding food storage, only 13% indicated using fridges for such purpose. However, 85.5% indicated that food is left in covered pots. It emerged from interviews with key-informants that hand hygiene is poorly

practised and some children become sick because of being given food that is not well taken care of. *“Some people don’t practice hand hygiene after using a toilet, or when hands are dirty, they touch food and feed children without washing hands.* P3 & P5: HEW-FGP3.

*“Mostly, children under five become sick if they are given food that is not well-taken care of, like not being covered, and that is exactly what is happening around here.”* P3: Priest

*Table 18: Practice questions related to diarrhoea treatment and prevention in general*

<b>Variable</b>	<b>TRUE (%)</b>	<b>FALSE (%)</b>
<b>MANAGEMENT OF DIARRHOEA</b>	<b>(31.3%)</b>	
Have you ever gone for perineal cutting as part of the treatment for your child suffering from diarrhoea?	321 (60.5)	209 (39.4)
Have you ever gone taken your child for prayers as part of the treatment for your child suffering from diarrhoea?	25 (4.7)	505 (95.2)
<b>When is it required to take your child to the healthcare facility from the onset of diarrhoea?</b>		
1/Less than the one day of onset	332 (62.6)	198 (37.3)
2/Within one day of onset	240 (45.3)	290 (54.7)
3/After more than one day of onset	148 (27.9)	382 (72.0)
<b>If the child has persistent diarrhoea, what should the mother do?</b>		
1/Give ORS at home	340 (64.4)	190 (35.8)
2/Take the child to Hospital/clinic	467 (88.1)	63 (11.9)
3/The mother goes for cutting at the perineal area	208 (39.2)	322 (60.8)
4/The father goes for cutting at the perineal area	192 (36.2)	338 (67.8)
5/Both parents should go for perineal cutting	223 (42.1)	307 (57.9)
6/Take the baby to a traditional healer	116 (21.9)	414 (78.1)
7/Take the baby to a priest for prayers	44 (8.3)	486 (91.7)
<b>PREVENTION OF DIARRHOEA</b>	<b>(P: 33.8%)</b>	
<b>What do you use for hand washing?</b>		
1/Water only	48 (9.0)	482 (90.9)
2/Water and soap	456 (86.0)	74 (14.0)
<b>When do you practice hand washing?</b>		
1/When hands are dirty, only	307 (57.9)	223 (42.1)
2/After using a toilet	419 (88.1)	111 (20.9)
3/After attending to a child that has defecated	388 (73.2)	142 (26.8)
4/Before handling food	455 (85.8)	75 (14.2)

5/Only when water is available	86 (16.2)	444 (83.8)
4/Before feeding a child	372 (70.2)	156 (29.4)
<b>What do you usually do to make the water safer to drink?</b>		
Boil	399 (75.3)	131 (27.7)
Add bleach/chlorine	343 (64.7)	187 (35.3)
Strain through a cloth	135 (25.5)	395 (74.5)
Use water filler ceramic/sand/ composite etc.	32 (6.0)	498 (94.0)
Nothing	73 (13.8)	457 (86.2)
<b>How frequently do you bathe your child?</b>		
Daily	432 (81.5)	98 (18.5)
Twice weekly	46 (8.7)	484 (91.3)
Only when the child looks dirty	36 (6.8)	494 (93.2)
<b>How do you store leftover food?</b>		
Fridge	69 (13.0)	461 (87.0)
Left in a covered pot	453 (85.5)	77 (14.5)
Left in an uncovered pot	35 (6.6)	495 (93.4)
Throw away leftover food	14 (2.6)	516 (97.4)
Mean score 51.16 SD=17.61		
Range 0-93%		
Total participants: 530		

The practice mean score derived from analysis is 51.16, 17.61 SD, the total number of participants was 530.

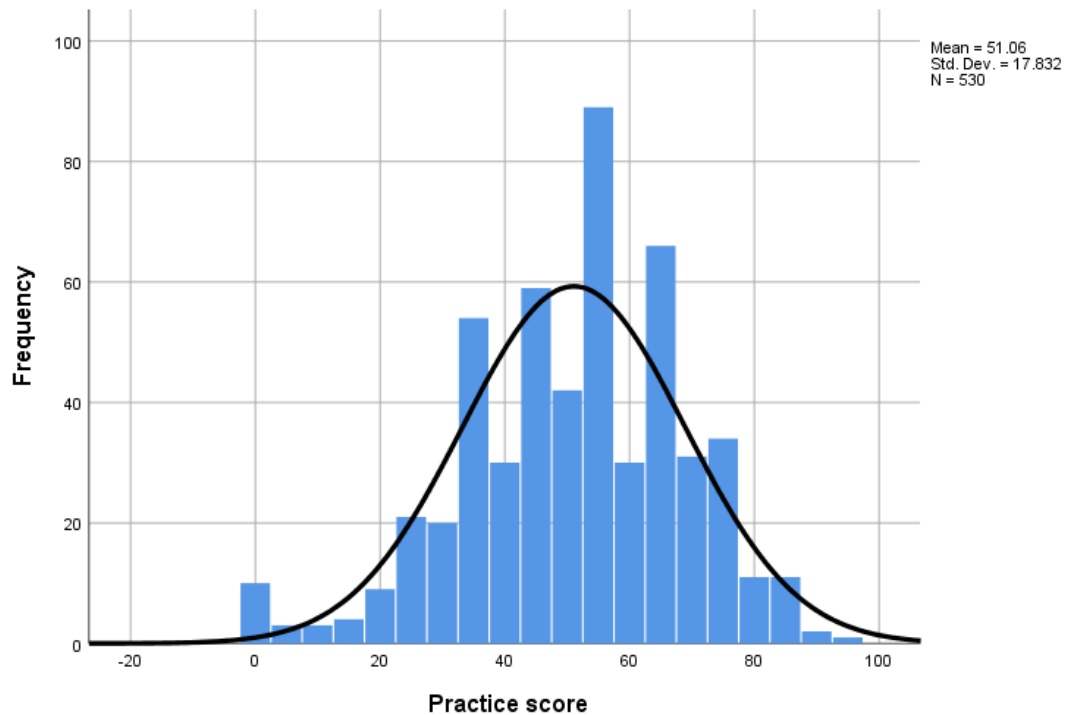


Figure 24: Distribution of practice scores of respondents in management and prevention of diarrhoea

#### 4.4.4 Factors influencing the caregivers/parents' perineal cutting practices

Logistic regression analysis was performed to assess the impact of several factors on the likelihood that respondents would perform perineal cutting as part of diarrhoeal disease management in children under five. The model contained seven independent variables (residential area, level of education, marital status, caregiver knowledge about diarrhoea, attitude related to diarrhoea, practice, and age). The full model containing all the predictors was statistically significant  $\chi^2$  (20, N=530) = 85.19,  $p < .001$  indicating that the model could distinguish between the respondents who indicated that they performed perineal cutting and those who did not. The model explained between 14.8% (Cox and Sell R square) and 20.1% Nagelkerke R squared) of the variance in perineal cutting and correctly classified 68.5% of the cases. Based on the results, Table 19 shows that only five of the independent variables made a unique statistically significant contribution to the model (Residential area, level of education, knowledge about diarrhoeal disease, attitude, and practice related to diarrhoeal disease). The strongest predictor of perineal cutting was parent/caregiver-educated educational level, recording an odds ratio of 4.03. This indicates that parents/caregivers who had lower education were four times going to perform perineal cutting than those with higher education. The odds ratio of 0.16 for

negative practices related to management and prevention of diarrhoeal disease was less than 1, indicating that with an increase in knowledge, 16% of respondents were less likely to perform negative practices, controlling for other factors in the model.

*Table 19: Logistic Regression – Factors associated with parents’ perineal cutting as part of managing diarrhoea in children*

Variable	B.	SE	Wald	df	Sig.	Exp(B)	95% C.I for Exp.B	
							Lower	Upper
Residential Area			6.22	2	.04			
Residential Area (1)	-1.77	1.14	2.44	1	.12	.17	.02	1.57
Residential Area (2)	-1.00	1.09	.85	1	.36	.37	.04	3.09
Gender (1)	-.11	.46	.06	1	.81	.89	.37	2.19
Gender (2)	-.11	.46	.06	1	.81	.89	.37	2.19
Education Level of Parent/Caregiver			4.50	3	.21			
Education Level of Parent/Caregiver (1)	-.26	.30	.79	1	.38	.77	.43	1.37
Education Level of Parent/Caregiver (2)	-.08	.32	.07	1	.80	.92	.49	1.73
Education Level of Parent/Caregiver (3)	1.39	.88	2.50	1	.04	4.03	.72	22.67
Marital			.19	4	1.00			
Marital (1)	-.04	.25	.02	1	.90	.96	.59	1.57
Marital (2)	-.04	.34	.02	1	.90	.96	.50	1.86

Marital (3)	-.52	1.53	.12	1	.73	.59	.03	11.82
Marital (4)	.09	.51	.03	1	.86	1.10	.41	2.95
Ownership of Radio	-.21	.23	.83	1	.36	.81	.51	1.28
Level of knowledge about Acute Diarrhoea			10.92	2	.00			
(1) (poor)	-.78	.24	10.27	1	.00	.46	.29	.74
(2) (moderate)	-.79	.37	4.64	1	.03	.46	.22	.93
Attitude score category on health-seeking behaviour	-.75	.22	11.35	1	.00	.47	.30	.73
Practices categories			21.93	2	.00			
Positive practice	-1.06	.37	8.17	1	.00	.35	.17	.72
Negative practice	-1.85	.41	20.22	1	.00	.16	.07	.35
Care Givers age category			9.17	4	.06			
Care Givers age category (1)	.35	.45	.63	1	.43	1.42	.60	3.41
Parents/caregivers age category (2)	-.27	.45	.37	1	.54	.76	.32	1.82
Parents/caregivers age category (3)	-.21	.43	.22	1	.64	.82	.35	1.90
Parents/caregivers age category (4)	.46	.46	1.00	1	.32	1.58	.64	3.91
Constant	3.07	1.26	6.00	1	.01	21.63		

a. Variable(s) entered on step 1: Residential Area, Gender, Education Level of Parents/Caretakers, Marital, Availability of Radio, Knowledge score category on Acute Diarrhoea, Attitude Score category Health-seeking Behaviour, Practice category, and Parents/caregivers age category.

#### 4.4.5 Discussion

This study aimed to explore and describe parents'/caregivers' practices associated with the parents'/caregivers' health-seeking practices related to preventing and managing diarrhoea. This study has shown that slightly more than half, 52% of the parents or caregivers, had moderate practice, 40% had poor practice, and only a minority, 8%, had good practice. The findings align with a study conducted in Fafita Lekonia District in Ethiopia whereby a minority 37.6%, of the parents were found to have practised while 62.4% majority had poor practices.<sup>(80)</sup> Regarding the management for children who were reported to have suffered from diarrhoea two weeks before the survey, 44.0% indicated that the child was taken to the hospital. On the contrary, this study's findings differ from a study conducted in Dire Dawa, Eastern Ethiopia, where 98% of the parents sought medical treatment for their children during diarrhoea.<sup>(83)</sup>

Furthermore, 29.0% of parents or caregivers indicated they performed home management. Nevertheless, 27% of parents or caregivers indicated that they did not give any treatment. These findings are in line with the study conducted in Fagita Lekoma District, vis-à-vis caregivers practice, 20.3% of caregivers were reported not taking any measures related to their children who have suffered from diarrhoea.<sup>(80)</sup> Additionally, 20.0% of parents signposted that they went for perineal cutting and the father 9.0%, both parents 11.0%. Furthermore, 61% of the parents indicated that they had used perineal cutting to manage or prevent diarrhoea. It is reported that parents of children with persistent diarrhoea undergo vaginal and perianal cutting practices believing that if they do so, their children will get better. However, the practice reports not being of any benefit to the children or the mother.<sup>(58)</sup>

Also, 11.0% took the child to traditional healers, 4.0% indicated taking their child for prayers, 3.0% of mother indicated stopped breastfeeding, and a dog was sought 0.8%. Breast milk plays a big role in the natural immunological mechanisms that protect the child against diarrhoeal disease.<sup>(136)</sup> Based on the narratives, participants indicated that diarrhoea comes in different forms. They stated that some diarrhoea could be managed with western medicine and that some types that will not respond to western medicine. Such require perineal cutting, scratching the baby's mouth, sucking the child's blood, giving water mixed with flowers or, stopping breastfeeding or giving an enema containing

faeces of dogs or birds—which can be harmful to the babies. Health workers indicated coming across mortality in under-fives related to the use of herbs intended to manage a diarrhoeal disease. Literature reported harmful practices in diarrhoeal management being common in some; such practices are reported to reduce the correct management resulting in treatment failure, sustained nutritional deficits, and increased mortality.<sup>(40)</sup> Parents'/caregivers' perceptions on accessibility to healthcare reveal that health services continue to fail the very poor; 27% of the parents or caregivers indicated not having money, 21% that clinics or hospitals are very far and they have no one to take care of other children. Unaffordable transport makes it difficult for the deprived to reach facilities. Poor parents or caregivers face individual obstacles as they have neither the time, money, nor necessarily the incentive to access distant health facilities.<sup>(142)</sup>

#### **4.5. OBJECTIVE 1d: TO EXPLORE AND DETERMINE FACTORS ASSOCIATED WITH HEALTH-SEEKING BEHAVIOURS OF PARENTS OR CAREGIVERS OF CHILDREN UNDER FIVE WITH DIARRHOEA LIVING IN ENGELA DISTRICT**

##### **4.5.1 Introduction**

Human behaviours are complex since they can be influenced by multiple factors, either facilitating or hindering the behaviour.<sup>(143)</sup> Several factors such as environmental, family's sociocultural beliefs, social networks, socioeconomic status, maternal literacy and health education, parental age, and access to healthcare are reported to influence treatment-seeking behaviour.<sup>(84)</sup> Appropriate health-seeking behaviour means that healthcare is not delayed, the need to take a child for treatment outside the home is recognized, and the child is taken to an appropriate provider or healthcare facility.<sup>(144)</sup> Parent or caregiver practices related to health-seeking have been recognized as important social and anthropological factors that enlighten high mortality rates among children under five. Subsequently, improving caregivers' treatment-seeking behaviour for managing acute diarrhoea in children under five requires understanding key factors influencing this process and the context within which such behaviour occurs.<sup>(84)</sup> Additionally, improving families' health-seeking could significantly contribute to the reduction of child mortality.

Equally, information on healthcare utilization plays a vital role and has important policy implications in the development of the health system development.<sup>(145)</sup>

#### **4.5.2 Discussion of the quantitative results for Objective 1d**

A mixed method was used to determine the factors associated with health-seeking behaviour by employing both qualitative and quantitative approaches. Quantitative data were obtained from 126 parents or caregivers who indicated that their children had suffered from diarrhoea two weeks prior. The 126 parents or caregivers were from the total number of 530 parents or caregivers who participated in the current study. Parents or caregivers were categorized as having practised appropriate or inappropriate health-seeking based on the actions taken when their children suffered from diarrhoea a week prior to data collection. In the current study, the definition of appropriate seeking behaviour: *It is when care was sought promptly within 24 hours from a skilled healthcare provider after recognizing acute diarrhoea as well as use of Oral Rehydration Salts (ORS) solution or any other solution recommended and did not consult a traditional healer or spiritual healer in the management of diarrhoea.*

##### *4.5.2.1 Socio-demographic characteristics*

In this study, 126 parents or caregivers took part in the research, and most study participants, 70.6%, were biological parents of the selected child compared to 5% of the fathers. However, 16% of the children were under the care of their grandparents, 9% under the care of aunties, and 0.8% under the supervision of a brother/sister. (Figure 26). On the contrary, some participants who participated in interviews indicated that most of the children in their villages are under the care of their grandparents (see quotes below).

*“The challenge we face is when we go to the households, we only find elderly people. Sometimes we want to give health education, but it becomes difficult since the young ones are not home.”* P3: HEW-FGD7

*“I noticed that grandparents bring up many children; they will tell you the parents are somewhere else.”* P2: Doctor-KI

*“My child stays with the grandparents from the father’s side and now is admitted with malnutrition.”* P1: M/C-FGD6.

“Many children in our villages are under the care of the elderly people (the grandparents); you think they have time to take proper care of those children”? P4: M/C-FGD6

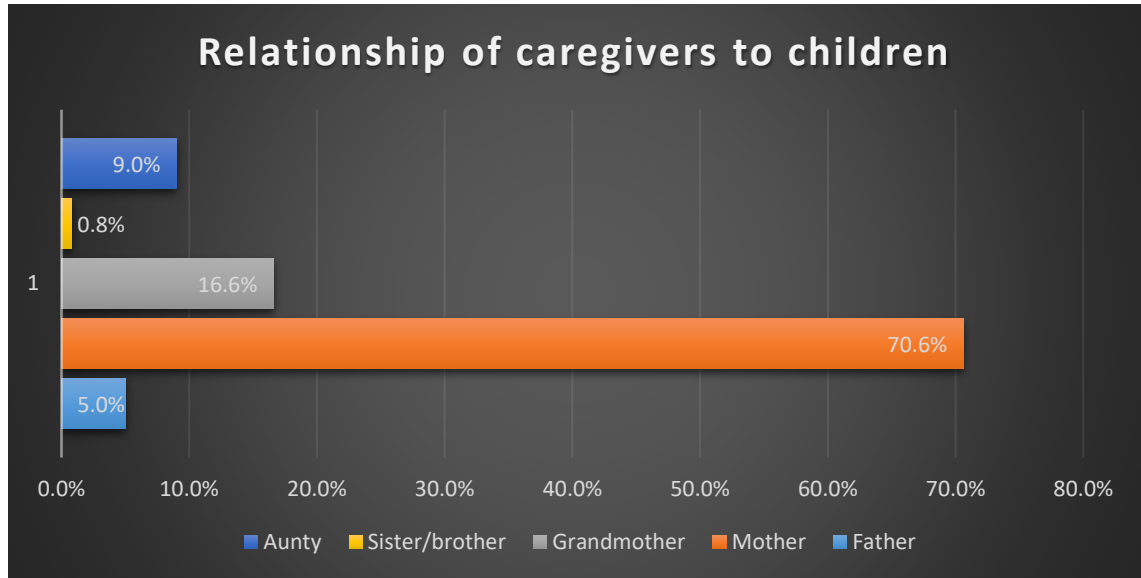


Figure 25: Relationship of caregivers with children in Engela District, Ohangwena Region 2019

Many of the participants whose child suffered from diarrhoea two weeks before data collection, 61.1%, were from rural areas, 38.9% from the informal settlement, and 0% from urban areas. Furthermore, 37.3% of parents or caregivers were in the age group of 31 to 40 years, 82.0% were unemployed, 19.0% were not educated, 46.0% had primary education only, 93.7% had an average income per household of 190-2000N\$, and 48.4% had 5-10 people per household.

Related to the socio-demographic characteristics of the children, more than half, 55.6%, were females, and 34.9.1% were in the age group of 12-23 months. (Table 20).

*Table 20: Distribution of sociodemographic characteristics of Parents/caregivers and children under-five in Engela District, Ohangwena Region Namibia, 2019*

<b>Variable</b>	<b>Frequency (n=126)</b>	<b>Percent (%)</b>
<b>Residential area</b>		
Informal settlement	49	38.9
Rural areas	77	61.1
<b>Mother's/caregiver's age group</b>		
18 - 30	39	31.0
31 - 40	47	37.3
41 - 50	29	23.0
51 - 60	7	5.6
> 60	4	3.1
<b>Employment status of mother/caregiver</b>		
Unemployed	103	82.0
Employed	10	8.0
Self-employed	8	6.0
Famer	5	4.0
<b>Mother's/caregiver's education level</b>		
Not educated	24	19.0
Primary education	58	46.0
Secondary education	41	33.0
Higher education	3	2.0
<b>Average monthly income per household</b>		
190-2000N\$	118	93.7
>2000-5000N\$	8	6.3
<b>Number of people per household</b>		
-4	35	27.8
5-10	61	48.4
10-20	28	22.2
>20	2	1.6
<b>Age of under-five</b>		
Child's age (in months)	23.67 ±15.11	
Mean age (mean ± SD, years)		
0-11	35	27.8
12-23	41	34.9
24-35	23	18.3
36-47	8	6.3
48-59	16	12.7
<b>Gender of children</b>		
Male	56	44.4
Female	70	55.6
<b>Total</b>	<b>126</b>	<b>100</b>

#### *4.5.2.2. Health-seeking behaviour of mother/caregiver among their children with diarrhoeal disease*

The majority, 73% of the participants, were categorized as having inappropriate health-seeking behaviour, whereas only 27% of parents or caregivers did seek appropriate healthcare for their children (Figure 27). Based on the narratives from interviews with health workers, it was indicated that most parents delay seeking help. Children are kept at home with the hope that they will get better. It was evident from health workers' interviews that seeking help on time is a problem in the study area. See the quote below:

*“Many times, when you interview parents or caregivers, you realize that they take a long time before bringing the child to the hospital. And when you do a physical examination, you can also tell that the child has been sick for a long time, but when you ask them, they may not tell you exactly for how long the child has been ill. They keep the child at home, hoping that the child is going to get better, and they go through a long process before they bring the child to the healthcare facility”*. P3: Doctor-KI

*“Even those that stay near keep the kids at home until the child is worse; that is when they come to the Clinic.”* P5: Nurse-KI

However, one of the health workers indicated that more than half of the parents or caregivers take their children to health facilities on time. However, they indicated that some don't come on time because of visiting traditional healers.

*“Maybe about 60% come on time; however, there are those who delay because of coming from very far or because of going to traditional healers they come late”*. P4: Doctor-KI

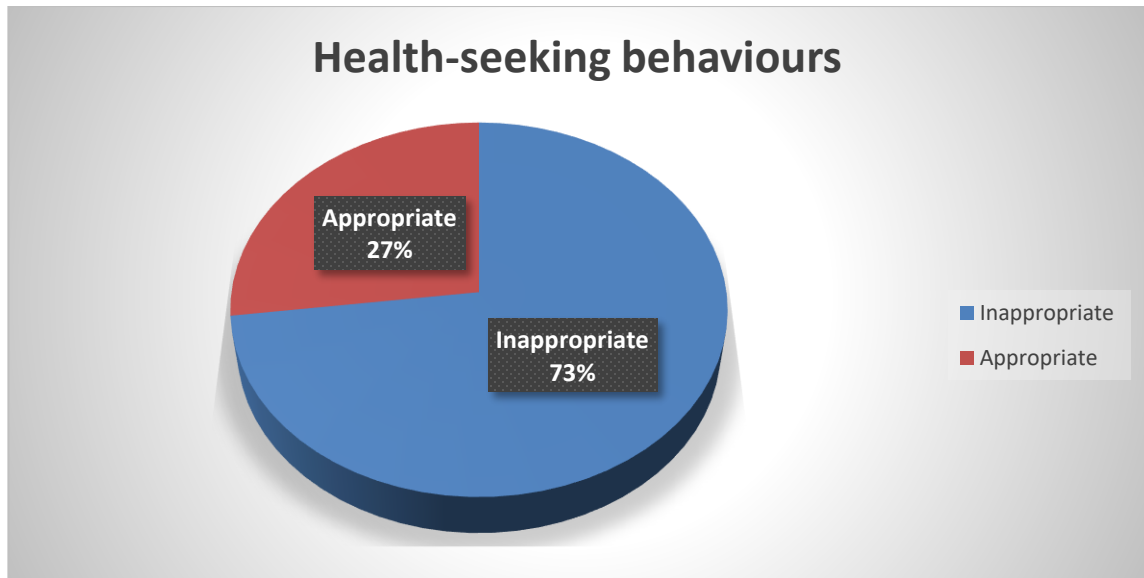


Figure 26: parents'/Caregivers' health-seeking behaviours among children under five with the diarrhoeal disease in Engela District Ohangwena Region.

#### 4.5.2.3. Duration of diarrhoea before seeking help at the healthcare facility

The largest proportion, 44%, of the parents/caregivers of the children who suffered from diarrhoea in the past two weeks before data collection indicated that they sought help within the 1<sup>st</sup> or 2<sup>nd</sup> day. However, 11% stated that they sought help after more than three days and 32% indicated that they had not sought help at all (Figure 28). Equally, it has emerged from the interviews that some parents/caregivers took their children to health facilities on time, and some took them late.

*Some bring them on time, but some bring them after three days, but if you ask them what they have done for the child, they will say they tell you that they have done nothing as they thought diarrhoea would stop by itself. P8&9: Nurse-KI*

*“What I experienced is that most of the parents with children suffering from diarrhoea most of the time come to the clinic after three to four days, and when they come to the Clinic, the children are very dehydrated and wasted.” P3: Nurse-KI*

*“Well, I would say some do, some don't come on time. We note that because we ask them when the diarrhoea started, they will tell you it started two or three days ago. Some come after four days, and some come to the healthcare facility only when the child is showing signs of severe dehydration; then we need to intervene by putting up drips, but some come within one day of the onset of diarrhoea”. P7: Nurse-KI*

*“For most of them here in our setting, they come and seek medical care at a very late stage; that is the experience.” P1: Doctor-KI*

*“What I have noticed is most of them will come within a week, but the ranges vary, some of them will come after three days, four days, or five days, and sometimes depending on diarrhoea, they will come in when it is too late when the child is severely ill and severely dehydrated.” P2: Doctor-KI*

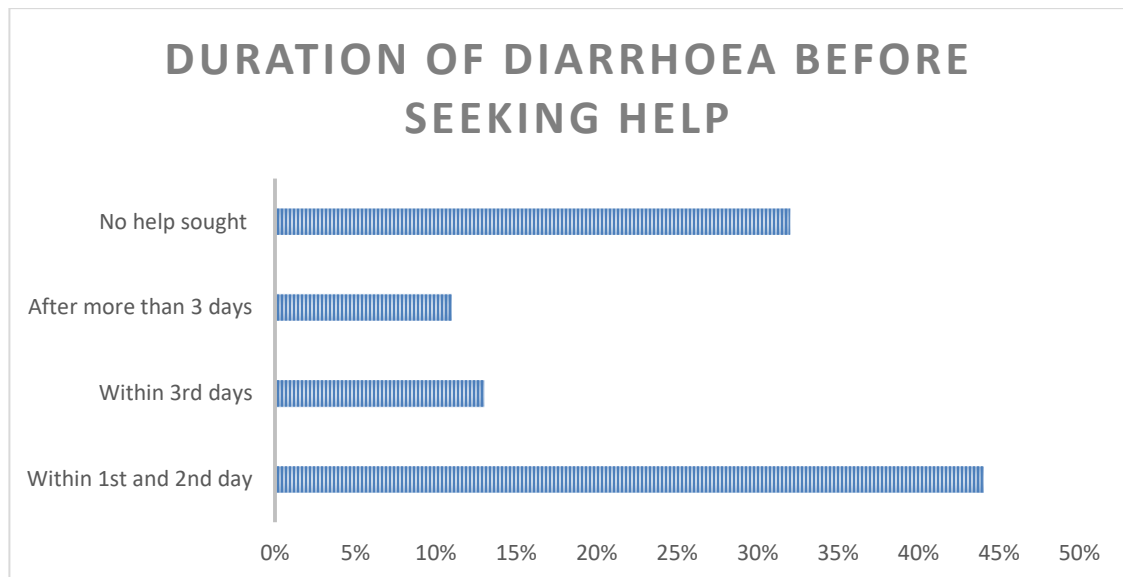


Figure 27: Duration of diarrhoea before seeking help

#### 4.5.2.4 Socio-demographic variables of parents or caregivers stratified by health-seeking behaviours

Table 21 displays the distribution of socio-demographic characteristics of the parents or caregivers based on their health-seeking behaviour. Again, the majority, 73% of the participants, were categorized as having inappropriate health-seeking behaviour.

A total of 126 parents or caregivers whose children had diarrhoea in the two weeks before the survey was purposely selected and interviewed. More than half of the participants, 61.1%, were from rural areas, and 38.9% were from an informal settlement in Engela District. Nevertheless, the findings from the current study show that 53.2% (95% CI of

44.49; 61.91) of the participants who were categorized as having inappropriate health-seeking behaviour were from rural areas. The observed difference was found to be statistically significant.  $p \leq 0.018$ ). Table 21 displays the distribution of socio-demographic characteristics of the parents or caregivers based on their health-seeking behaviour. The majority, 73% of the participants, were categorized as having inappropriate health-seeking behaviour. Equally, inappropriate health-seeking behaviour was found to be higher 39% (95% CI of 30.48; 47.52) among parents or caregivers aged between 18-30 years; moreover, the observed difference between parents or caregivers' age category was statistically significant  $p \leq 0.012$ .

Additionally, 65.8% of the parents or caregivers categorized as having inappropriate health-seeking behaviour were single parents. However, the observed difference was not statistically significant,  $p \leq 0.163$ . Furthermore, 84.8% of the parents or caregivers categorized as practising inappropriate health seeing were unemployed; nevertheless, the observed difference was not statistically significant  $p \leq 0.178$ . Related to the mother or caregivers' level of education, for parents who were regarded as having inappropriate health-seeking, 20.3% were illiterate, and 45% reached primary education only. Nevertheless, level of education was not significantly associated with inappropriate health-seeking  $p \leq 0.272$ . Equally, inappropriate health-seeking was high at 43.3% among participants who belonged to the Protestant/ELICIN church. Still, religion was not significantly associated with inappropriate health-seeking behaviour  $p \leq 0.655$ . The majority, 93.7% of the participants whose child suffered from diarrhoea in the past two weeks, had a low monthly income ranging from 190-2000N\$. However, income was not significantly associated with inappropriate behaviour  $p \leq 0.128$ . Vis-à-vis more than half, 55.7% of parents or caregivers living in a household with 5-7 inhabitants were categorized as having inappropriate health-seeking. Alternatively, the observed difference was found to be statistically significant,  $p \leq 0.050$ .

Table 21: Socio-demographic characteristics of parents/caregivers stratified by health-seeking behaviours (n=126)

	Health-seeking behaviour		Total	95% C.I of the inappropriate health-seeking	p-value*
Variable	Appropriate n (%)	Inappropriate n (%)	n %		
<b>Residential area</b>					
Informal settlement	12 (25.5)	37 (46.8)	49 (38.9)	[38.09; 55.51]	0.018*
Rural areas	35 (74.5)	42 (53.2)	77 (61.1)	[44.49; 61.91]	
<b>Mother's/caregiver's age group</b>					
18 - 30	8 (17)	31 (39.0)	39 (31.0)	[30.48; 47.52]	0.012*
31 - 40	19 (15.1)	28 (22.2)	47 (37.3)	[14.94; 29.46]	
41 - 50	13 (10.3)	16 (12.7)	29 (23.0)	[06.89; 18.31]	
51 - 60	6 (4.8)	1 (0.8)	7 (5.6)	[00.76; 02.36]	
> 60	1 (0.8)	3 (2.4)	4 (3.1)	[00.27; 05.07]	
<b>Marital status</b>					
Single	26 (55.3)	52 (65.8)	78 (61.9)	[57.52; 74.08]	0.163
Married	12 (25.5)	11 (13.9)	23 (18.3)	[07.85; 19.94]	
Co-habiting	7 (14.9)	16 (20.3)	23 (18.3)	[13.28; 27.32]	
Divorced/separated/widow	2 (4.3)	0 (0.0)	2 (1.5)	[00.00; 00.00]	
<b>Employment status of mother/caregiver</b>					
Unemployed	36 (76.6)	67 (84.8)	103 (82.0)	[78.53; 91.06]	0.178
Employed	3 (6.4)	7 (8.9)	10 (8.0)	[03.93; 13.87]	
Self-employed	4 (8.5)	4 (5.0)	8 (6.0)	[01.19; 08.81]	
Famer	4 (8.5)	1 (1.3)	5 (4.0)	[00.67; 03.28]	
<b>Parent's/caregiver's education level</b>					
Not educated	8 (17.0)	16 (20.3)	24 (19.0)	[13.28; 27.32]	0.272
Primary education	26 (55.3)	32 (40.5)	58 (46.0)	[31.93; 49.07]	
Secondary education	13 (27.7)	28 (35.4)	41 (33.0)	[27.05; 43.75]	
Higher education	0 (0.0)	3 (3.8)	3 (2.0)	[00.46; 07.14]	
<b>Parents/caregiver's religious denomination</b>					
Protestant/ELCIN	26 (55.3)	35 (43.3)	61 (48.4)	[34.64; 51.95]	0.655
Catholic	5 (10.6)	13 (16.5)	18 (14.3)	[10.02; 22.95]	
Anglican	14 (29.8)	26 (32.9)	40 (31.7)	[24.70; 41.10]	
Other religions	2 (4.3)	5 (6.3)	7 (5.6)	[01.96; 10.54]	

<b>Average monthly income per household</b>					
190-2000N\$	42 (89.4)	76 (96.2)	118	[92.86; 99.54]	0.128
>2000-5000N\$	5 (10.6)	3 (3.8)	(93.7)	[0046; 07.14]	
			8 (6.3)		
<b>Number of people per household</b>					
-4	14 (29.8)	21 (26.6)	35 (27.8)	[18.88; 34.32]	0.050*
5-7	17 (36.2)	44 (55.7)	61 (48.4)	[47.03; 64.37]	
8-10	14 (29.8)	14 (17.7)	28 (22.2)	[11.04; 24.36]	
>20	2 (4.3)	0 (0.0)	2 (1.6)	[00.00; 00.00]	
<b>TOTAL</b>	<b>47 (37)</b>	<b>79 (73)</b>		[65.25; 80.75]	

CI, confidence interval

\* Pearson's chi-square statistically significant: 0.05.

#### *4.5.2.5 Type of help sought by parents or caregivers for a child who had diarrhoea two weeks before data collection*

Diarrhoea prevalence among children understudy was 23.8%; 126 out of 530 children were reported to have suffered from diarrhoea. Parents or caregivers were asked how their child's diarrhoea was managed in the two weeks before data collection. Figure 29 shows parents'/caregivers' responses. A more significant percentage, 44.0%, indicated the child was taken to the hospital, 29% said they managed the child at home, and 27% said they had not done anything. The findings, as mentioned earlier, align with the narratives obtained from FGD discussions with parents or caregivers, whereby one indicated that she did not take her children to health facilities for treatment on time. Equally, one mother or caregiver whose child was suffering from diarrhoea during the data collection period indicated that she immediately brought the child to the hospital. See quotes below.

*"I brought my child to the clinic right away; from the clinic is where I get the sachets of ORS. If I already have ORS at home, I prepare it and give it as first aid; nothing can be done if it is over the weekends. You only wait till Monday". P3: M/C-FGD3*

*"I have done nothing. I just brought the child to the hospital." P2: M/C-FGD3*

Furthermore, health workers indicated that some parents or caregivers do manage their children at home.

*“Some parents or caregivers do come early. However, some do manage their children at home, maybe because of long distances, some people come from very far possible because the distance when they come only came when the child is exhausted”*. P6: Nurse-KI

Again, health workers indicated that some Parents/caregivers delay taking their children to a healthcare facility. Still, when asked what they have done to the children, they indicate that they have not done anything.

*Some bring the children after three days, but if you ask them what they have done for the child, they will say they have done nothing because they thought the diarrhoea would stop*. P8&9: Nurse-KI.

One of the parents or caregivers also indicated that sick people in the villages are not taken to hospitals for treatment right away since they are advised to wait and see how the disease progresses.

*“At the villages' people who are not feeling well, they are not taken to the hospital right away, or the same day; we are told to wait and see how the condition will progress. (ohaku tiwa, ina ya manga koshipangelo; taleni ngaa nena eshi ta uhala po; mongula tu yeni koshipangelo)”*.P6: MC-FGD5.

However, some participants indicated getting involved in practices such as perineal cutting .as 20.0% of the parents, 9.0% of fathers indicated going for perineal cutting, while 11.0% indicated both parents went for perineal cutting. Furthermore, based on the FGD, one parent/caregiver whose child was admitted in the hospital suffering from diarrhoea during the data collection period admitted that initially, when her child started suffering from diarrhoea, she went for perineal cutting. However, when the child did not get better, she informed the father to do the perineal cutting. However, after the father refused to go for cutting and the child did not get better, she decided to take the child to the healthcare facility.

*“When the child started with diarrhoea, I went for perineal cutting, the child did not get better, so I took the child to the hospital, but still the child did not get better. So I went back to the lady who cuts, and then she told me that the father might be the one that*

*possesses the child. So when I informed the father, he refused to go, that is when I decided to bring the child to the hospital again. P3: M/C-FGD2.*

Parents/caregivers also indicated that the management of diarrhoea depends on the perceived cause of diarrhoeal disease. They indicated that there is a type of diarrhoea believed to be caused by parents possessing the children, children possessing themselves, or other possessions; for such kinds of diarrhoea, it is believed perineal cutting is the only solution.

*"For normal diarrhoea, before I take the child to the hospital, I will first prepare a rehydration solution at home. I will put eight spoons of sugar and spoons of salt, boil the water, put in one litre of water, and give the baby. But I don't know whether you are aware that there are different types of diarrhoea; there is the type that is watery, mucoid, and one that is in-between. With those types, maybe one can try to give ORS, home remedies or take the child to a healthcare facility. But, if the baby is being breastfed, there is a type of diarrhoea that contains milk; that type does not go to the hospital. Even if you take the child to the hospital, the child will not improve. Maybe you do it after you have already been treated traditionally. Believe me, if you go for the traditional treatment, they cut you at the perineum; that is when the child gets better". P1: M/C-FGD4*

*"If the child is passing stools that contain milk, that type of diarrhoea is a result of being possessed by the parents. One has to go for perineal cutting, but if the child is not getting better, take the child to the hospital." P5&P3: M/C-FGD6*

Nevertheless, 11.0% indicated that they took the child to a traditional healer, 4.0% took the children for prayers, 3.2% stopped breastfeeding, and 0.8% stated that they sought a dog as part of diarrhoea management. (See Figure29)

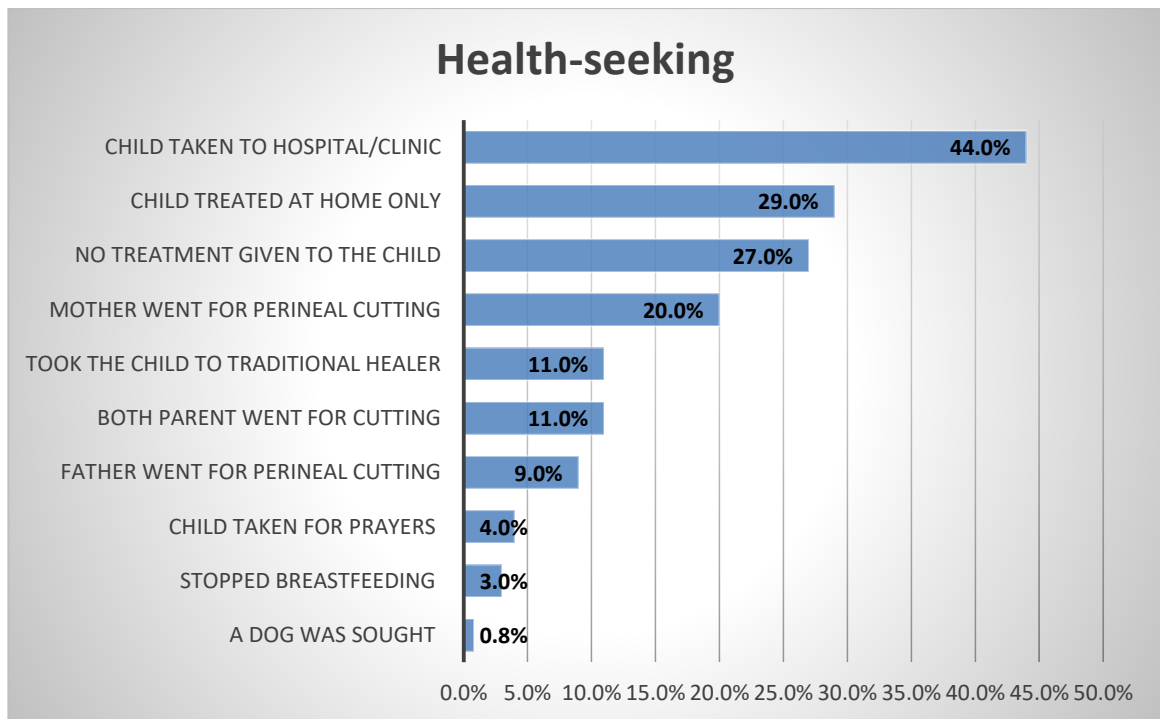


Figure 28: Number of times the child had diarrhoea in the previous two weeks

#### 4.5.2.6 Reasons for not taking the child to a healthcare facility

The Figure illustrates why parents or caregivers did not take the child to the clinic/hospital. Twenty-seven percent (27%) indicated that they had no money, 21% said the clinic/hospital was far, 16% stated that there was no one to take care of other children, and 10% stated that they were unable to find transport. In addition, the least 10% said that taking the child for treatment was unnecessary since diarrhoea was caused by teething, while 16% indicated other reasons.

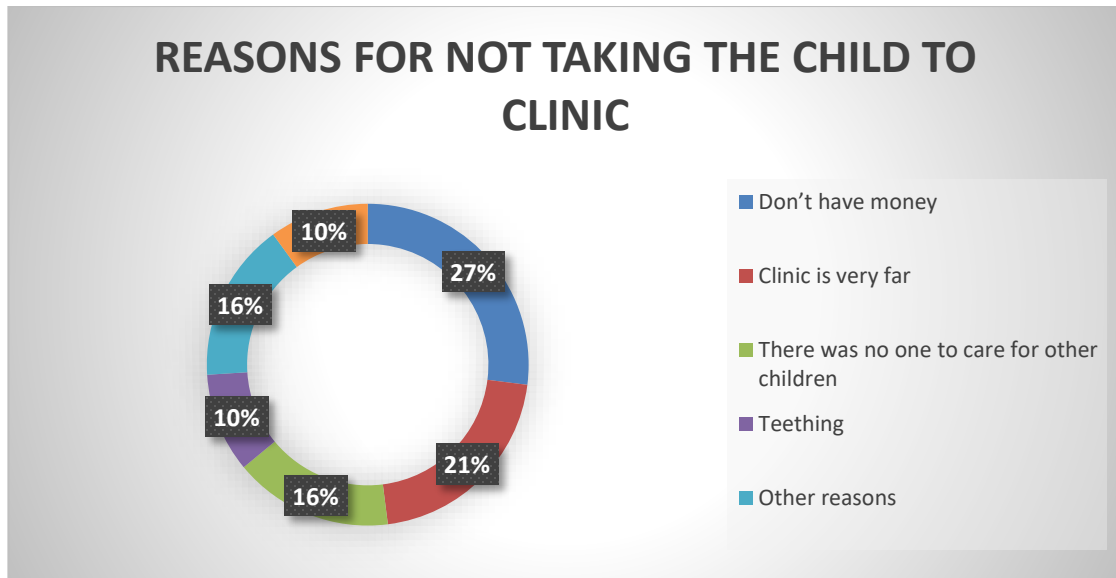


Figure 29: Reasons for not taking a child with diarrhoea to clinic/hospital

#### 4.5.2.7 Factors influencing appropriate health-seeking behaviour of parents/caregivers on diarrhoea

To be able to assess factors influencing health-seeking behaviour, direct logistic regression was performed.

The model contained fourteen independent variables (Residential area; The child has a fever; The child is unable to eat or drink; The child is repeatedly vomiting; There is blood in the stools; The child is refusing to eat or drink; The child has sunken eyes; The child is very thirsty; Education level of caretaker and/or mother, Number of people per household, Caregiver's age category, Monthly income per household, Marital status, Religion).

The full model containing all predictors was statistically significant,  $\chi^2 [14, N=104] = 41.65, (p<0.036)$ . This indicates that the model was able to distinguish between respondents who were categorized as having appropriate or inappropriate health-seeking behaviour. As shown in table 9, only four of the independent variables made a unique statistically significant contribution to the model (The child has a fever, blood in stools, number of people per household, caregiver age category, monthly income per household, marital status, and religion). The strongest predictor of appropriate health-seeking was a child having diarrhoea stained with blood, recording an odds ratio of 6.00. This indicates that the parents/caregivers who had a child with blood-stained diarrhoea were six times

more likely to take the child to a healthcare facility for treatment. Equally, those who had a child with diarrhoea with accompanying fever symptoms were more than five times likely to take their children to a healthcare facility for treatment.

*Table 22: \*Logistic Regression-Factors influence appropriate health-seeking behaviour*

Variable	B.	SE	Wald	df	Sig.	Exp(B)	95% C.I. for Exp. B	
							Lower	Upper
Residential Area	-.078	0.86	0.82	1	0.37	0.46	0.09	2.48
The child has a fever	1.63	0.68	5.67	1	0.02*	5.10	1.33	19.51
The child is unable to eat or drink	0.15	0.64	0.06	1	0.81	1.17	0.33	4.10
The child is vomiting repeatedly	0.53	0.63	0.71	1	0.40	1.69	0.50	5.75
There is blood in the stools	1.72	0.89	3.75	1	0.05*	6.00	0.98	32.11
The child is refusing to eat or drink	0.55	0.64	0.75	1	0.39	1.73	0.50	6.01
The child has sunken eyes	0.71	0.61	1.34	1	0.25	2.03	0.61	6.73
The child is very thirsty	-0.68	0.59	1.29	1	0.26	0.51	0.16	1.63
Mother/caregiver education level			1.63	3	0.65			
Not educated	17.72	29.00	0.00	1	1.00	44.10	0.00	17.72
Primary education	18.53	28.99	0.00	1	0.99	11.50	0.00	18.53
Secondary education	18.84	28.99	0.00	1	0.99	15.65	0.00	18.84
Number of people per household	0.30	0.15	4.37	1	0.04*	1.35	1.02	1.80
Mother/Caregivers age category	0.57	0.29	3.95	1	0.04*	1.77	1.01	3.12
Monthly income per household	-0.26	1.23	0.05	1	0.83	0.77	0.07	8.52
Marital status			4.50	2	0.11			
Single	0.62	0.79	0.60	1	0.44	0.54	0.11	2.55
Married	1.30	1.11	1.36	1	0.24	3.63	0.42	31.65
Religion			1.61	1.606	3	0.6658		
Protestant/ELCIN	0.93	1.42	0.43	1	0.51	2.54	0.16	40.84
Catholic	0.05	1.55	0.00	1	0.98	1.05	0.05	21.78
Anglican	1.22	1.43	0.72	1	0.39	3.37	0.20	55.99

b. Variable(s) entered on Step 1: Residential Area; The child has a fever; The child is unable to eat or drink; The child is repeatedly vomiting; There is blood in the stools; The child is refusing to eat or drink; The child has sunken eyes; The child is very thirsty; Education Level of Caretaker/Mother; Number of people per household; Mother/Caregiver's age category, Monthly income per household; Marital status; Religion.

#### *4.5.2.8 Discussion*

The study objective was to explore and determine factors associated with the health-seeking behaviour of parents or caregivers of children under five with diarrhoea living in the Engela District in the Ohangwena Region. Prompt and appropriate health-seeking practices are reported to potentially reduce child mortality significantly.<sup>(84)</sup> This study confirms numerous studies related to the high prevalence of inappropriate health-seeking and not seeking health for diarrhoeal disease. The current research shows that 73% of parents or caregivers practised inappropriate health-seeking, with about 32% taking no action and 11% seeking help after three days. Delay in seeking treatment may be due to the belief that the illness may subside by itself through time. However, the seriousness of the problem may be perceived later when the child fails to recover, and this may be when treatment is sought. Furthermore, 20% of parents indicated going for perineal cutting, 11% of both parents went for perineal cutting, 11% took the child to a traditional healer, 9% of fathers went for perineal cutting, 4% of children were taken for prayer, 3% parents stopped breastfeeding, and 0.8% sought a dog as part of the management of diarrhoea.

This study's findings align with a survey conducted in Dendi District, Western South, Ethiopia; parents perceived childhood diarrhoea could result from traditional and biomedical causes, and 69.3% sought help from traditional healers and health facilities.<sup>(44)</sup> Findings from qualitative key-informant indicated that parents first visit the traditional healer and visit the health facilities when things worsen. However, 11% of parents or caregivers took their children to a healthcare facility after three days. The possible reason for the delay in seeking healthcare could be a place of residence; the current study found parents'/caregivers' place of residence to be significantly associated with inappropriate health-seeking. Similar finds were reported in a survey conducted among the population of the Gaza strip.<sup>(146)</sup> More than half, 53% of people from rural areas, were found to have inappropriate health-seeking behaviour. In the qualitative findings, respondents reported

distance to health facilities, lack of urgency to seek help, cultural beliefs, and spiritual healing as some of the obstacles to not seeking health care. Equally, the parent or caregiver age group was significantly associated with health-seeking behaviour; 39% of parents or caregivers who were found to have inappropriate health-seeking behaviour were between 18 and 30 years old.

Furthermore, the number of people per house was significantly associated with health-seeking behaviour. These results align with a study conducted in Bangladesh; households having only one child less than five years old were more likely to seek care for their child.<sup>(6)(146)</sup> Moreover, symptoms such as fever and blood in the stools were found to be significantly associated with health-seeking. Parents or caregivers indicated reasons for not seeking health to be lack of money 27%, and the clinic is very far 21%, there was no one to take care of other children 16%, other reasons 16%, unable to find transport 10% as well teething 10%. The reason could be related to parents'/caregivers' belief that an eruption of teeth in younger children may result in mild and self-limited diarrhoea.<sup>(147)</sup>

#### **4.5.3 Discussion of the narratives for Objective 4**

The narrative results were derived from interviews with health workers (three doctors and ten nurses) and nine focus group discussions comprising 4 to 11 participants per group with 57 HEWs and six focus group discussions containing five parents per group with a total of 30 parents or caregivers. In addition to field notes, a voice recorder was used to record the interviews for verbatim transcription. The interviews and the focus group discussions were held in available conference rooms and doctors' and nurses consulting rooms. Data collection ceased when the researcher achieved data saturation related to health-seeking behaviour.

A structured question was asked to generate qualitative findings as follows:

*“Based on your experience with parents/caregivers of children under five suffering from diarrhoea, how do they seek help?”*

Probing questions were used to address related issues or factors that may have influenced health-seeking behaviour. For example, parents or caregivers who brought their children

to the healthcare facility or whose child was admitted suffering from diarrhoea were asked questions about practices done before getting the child to the healthcare facility.

A discussion of the results of the narrative related to reasons contributing to not seeking help is presented below.

*Table 23: Themes, sub-themes and codes from data analysis related to factors contributing to health-seeking behaviour*

<b>THEMES</b>	<b>SUB-THEMES</b>	<b>CODES</b>
4.5.3.1 Factors associated with health-seeking behaviour	4.5.3.1.1 Cultural factors	<ul style="list-style-type: none"> <li>• Traditional beliefs</li> <li>• Traditional healer</li> <li>• Traditional medicine</li> <li>• Spiritual beliefs</li> <li>• Stereotyping</li> <li>• Victimization</li> </ul>
	4.5.3.1.2 Health service characteristics/ Health service-related factors	<ul style="list-style-type: none"> <li>• Shortage of staff</li> <li>• Nurses attitude</li> <li>• Overcrowding</li> <li>• Long waiting times</li> <li>• Inadequate service provision</li> </ul>
	4.5.3.1.3 Mother/caregiver-related factors	<ul style="list-style-type: none"> <li>• Ignorance</li> <li>• Negligence</li> <li>• Alcohol consumption</li> <li>• Lack of urgency</li> <li>• Elderly influence &amp; social networking</li> <li>• Knowledge</li> <li>• Multiple tasks</li> <li>• Practices</li> </ul>
	4.5.3.1.4 Service accessibility	<ul style="list-style-type: none"> <li>• Physical distance to the healthcare facility</li> <li>• Shortage of health facilities</li> <li>• Lack of transport money</li> <li>• Clinics not functioning over weekends</li> </ul>
	4.5.3.1.5 Characteristics of disease and symptoms	<ul style="list-style-type: none"> <li>• Fever</li> </ul>
4.5.3.2 Home management of diarrhoea	4.5.3.2.1 Traditional practices	<ul style="list-style-type: none"> <li>• Perineal cutting</li> <li>• Scratching the child's mouth</li> <li>• Dog is sought</li> <li>• Insect sucking blood</li> <li>• Stop breastfeeding</li> <li>• Mixture of flowers</li> </ul>

		<ul style="list-style-type: none"> <li>• Enema</li> <li>• No treatment</li> <li>• Other solutions</li> </ul>
	4.5.3.2.2 Biomedical care	<ul style="list-style-type: none"> <li>• ORS</li> <li>• Medication from pharmacy</li> <li>• Health services</li> </ul>

#### *4.5.3.1 Theme 1: Factors associated with health-seeking behaviour*

According to a study conducted in Tlaxcala, Mexico, on parents' health-seeking in acute diarrhoea, parents were reported to seek medical assistance when they perceived a worsening of clinical conditions, such as: bloody diarrhoea, vomiting, illness longer than three days, weight loss, and fever. Furthermore, it is indicated that signs of dehydration were not associated with healthcare-seeking because the mother did not recognise them.<sup>(84)</sup>

In the current study, culturally related factors, health service characteristics, health service-related factors, the parent or caregiver-related factors, service accessibility and disease characteristics and symptoms emerged as factors contributing to health-seeking behaviour.

##### *4.5.3.1.1 Sub-theme: Culturally related factors*

Cultural factors such as traditional beliefs, traditional healers, traditional medicine, spiritual beliefs, stereotyping, victimizing, teething, family, and social networks have contributed to health-seeking behaviour.

- **Traditional beliefs**

Traditional beliefs related to health-seeking when a child suffers from diarrhoea emerged to play a crucial role in the region. One mother made it categorically clear that every tribe

has its own beliefs and practices, and the same applies to the Ovambo tribe. One of the challenges indicated by HEW is the residents' traditional beliefs.

*“All the tribes have their own beliefs and practices, even the Boers have their own beliefs, and they also go for traditional healing when their children are sick.; that is what we do as well. We go for traditional healing” P1: M/C-FGD1*

*“It is only those beliefs about someone having tails; if the child develops diarrhoea, we are told both mother and father could be having the problem.” P3: M/CFGD2*

*“Some parents still believe in a child being possessed by parents or possessing themselves when the child has diarrhoea. The parents could possess the child if they have a tail, "eemhalo" or skin at their perineum; they go to a traditional healer for perineal examination and cutting if they are found to have such. The children possess themselves if they have pimples on the insides of their cheeks. When it is suspected that the problem is with the child, the child is taken to those who know how to treat those things very well, and they check in the child's mouth to determine if the child has papules that make them develop diarrhoea. The papules in the child's mouth are scratched with the finger to cure diarrhoea and prevent it from recurring". P4: HEW-FGD2*

*“Some of our challenges, some people are not coming to the hospital on time, as well as traditional beliefs. For example, there was a child who got burned by the fire, and instead of taking the child to the hospital, they took the child first to a traditional healer who knows how to hold fire so that it cannot continue (okaana oka twalwa tete kondudu; vati oyo hai kwata omundilo kau ye komesho), when I went to their house I found the child has a wound covered with herbs and was not taken to the hospital then I told them to take the child to the hospital”. P2: HEW FGD6*

Furthermore, HEW indicated that parents who believe in children being possessed, even if you tell them to go to the hospital, they may agree, but in reality, they will not implement what they agreed to.

*“People who believe in the child's being possessed, when you tell them about going to the hospital, they may tell you that they will go simply because they want to please you, but*

*in reality, they will not follow your instructions. Or they can go just with the aim for the child to get some fluids, but they will still proceed for perineal cutting".* P3: HEW FGD7

Even one HEW indicated that she believes diarrhoea can occur due to the child being possessed by the parents since she had experienced it, and after she received a perineal cutting, her child recovered.

*"About parents possessing the children, I also believe that very much, my child had diarrhoea; by then I was still breastfeeding, but the child started vomiting the milk, so I went for a perineal examination and was cut, and my baby become ok."* P2: HEW-FGD5

Health workers also indicated that traditional beliefs contribute to delays in health-seeking.

*"The Oshiwambo believes they are the ones contributing to the delay in health-seeking in this area. The Ovambo people like to go for perineal examination, believing that the parents could possess the child; under such circumstances, the child can even die because of those beliefs. Instead of taking the child to the hospital, they will first go for traditional healing".* P8: Nurse-KI

- **Traditional healer**

Health workers indicated that some of those who delayed health-seeking indicated visiting traditional healers.

*"There are those who delay because of the reason of going to traditional healers."* P4: Doctor-KI

*"Yes, some of them, before they come to the Clinic, first they go to a traditional healer, especially for the kids suffering from diarrhoea. Parents think haemorrhoids or whatever they believe something at their perineum is what causes diarrhoea"* P3: Nurse-KI.

*"Most of them come to us when they have already sought help at places like the traditional healers. Because of the belief that things at their perineal area cause diarrhoea in children, if it is not cut away, they say "omushila"(a tail at the anal area), or some say "eemhalo"(papules within the vagina), such things."* P8:Nurse-KI

*“Yes, oshipa,(skin at the perineal area) or eemhalo,(papules within the vagina) or omushila (a tail at the anal area),. Therefore if your child has diarrhoea that worries you, you should try your best to go to the ladies that can cut, but if diarrhoea continues after the mother has been cut, then try to take the child to the hospital”.* P2: M/C FGD1.

*“The medication the nurses give doesn't do much for the child; the nurses also tell us that there is not much they can do, so what can we do? The only solution is to consult a traditional healer.”* P1: M/CFGD1

*“Parents bring the child when they are severely ill, sometimes after one week; for example, they first go for traditional healing to seek treatment for diarrhoea. From our side, we don't have a problem, but the transport of medications is a problem sometimes. Sometimes we order medicine, but the drugs are out of stock.”* P5: Nurse-KI

*“The Oshiwambo beliefs—the Ovambo people, like to go for perineal examination, with the belief that the parents could possess the child, under such circumstances, the child can even die because of those beliefs instead of taking the child to the hospital they will first go for traditional healing.”* P:8: NurseKI

- **Traditional medicine**

Parents or caregivers are reported first to start managing diarrhoea with traditional medicines and take the child to the hospital when the child is very sick.

*“Yes, they start first with the traditional treatment; they only decide to go to the hospital when the child is exhausted, and most of the times the child is admitted, sometimes they also become ok without going to the hospital”* P5: HEW FGD2.

*“Based on our Ovambo traditional practices, if the child has diarrhoea, you first give "omahangu" solution (millet flour mixed with cold water), then take the child to the hospital at a later stage if the child is not improving.”* P3: M/C-FGD4

- **Spiritual beliefs**

Health workers indicated that now and then, parents or caregivers visit churches for prayers related to a child suffering from diarrhoea.

*Yes, religion is being practised; some patients mix; they come from the hospital and go to church. Nevertheless, when they go to churches, they sometimes end up abandoning the medications issued at the hospital; however, that happens more frequently with other under five diseases, especially wounds you know we see terrible wounds here". P3: Doctor-KI*

*"Yes, some come and tell you that they have tried first going here and there, including going to church." P6: Nurse-KI*

*"When my friend's child had persistent diarrhoea, some told her that the child would only be ok if she received prayers. So the mother wanted to take the child out of the hospital. However, the nurses told the mother and her relatives to make a decision. Eventually, they decided the child should stay in the hospital, and the child got well, and up to today, she is ok." P3: MC-FGD2.*

Even though health workers indicated that parents or caregivers here and there practised spiritual healing, it is also reported that spiritual healing is not a very common practice in managing diarrhoea. Equally, some parents or caregivers indicated that they don't believe in going for prayers; they instead pray for the child themselves.

*"About churches, I might not recall anything like that as far as babies under the age of five are concerned." P2: Doctor-KI*

*"No, I don't believe in that, I can pray myself for the child, but it won't prevent me from taking the child to the hospital P1-6: M/C-FGD2*

- **Stereotyping**

A male who brought his child to the hospital and participated in the interviews indicated that males face challenges when taking their children to health facilities since it is considered a female responsibility.

*"I brought my child to the hospital carrying her on my back; they were shouting at me, saying why I am carrying the baby, where's the mother? Such things can make one*

*hesitate to take the child to a healthcare facility, so you will keep postponing taking the child to the hospital, fearing what people will say.* P1: M/C FGD5

- **Victimization**

Victimization is indicated to have contributed to delay in health-seeking. For example, parents will not take a sick child to a hospital before both parents have undergone perineal cutting and failed to do so, and one is accused of causing the child's death.

*“First try to go to the traditional healer and then only when the things worsened that is when they come to the hospital. It depends on the mix of their traditions, like they wait for the mother to be cut if the child has diarrhoea. They wait for that to happen before they come to the hospital. Most of the time, if the child dies in the hospital, they blame the mother if she was not cut; the cutting is done at the anal area. So that is why they always present late because they will try to do that first before they come”.*P1 Doctor-KI.

*“When my child was sick, the mother told me to go for perineal cutting. I refused to go. Then they send me a message saying if the child dies, it is me who has killed the child, and I should not even attend the child’s funeral. I kept making excuses, but one day I decided to go to one older woman who did a perineal examination but then she informed me that I didn’t have anything wrong. But she said that she needs to cut me as long as blood has come out, the child will be ok then she did cut me.”* P3: HEW-FGD1

#### **4.5.3.1.2 Sub-theme: Health services characteristics**

Health characteristics such as shortage of staff, nurses' attitudes, overcrowding, long waiting times, and supplies emerged to have contributed to poor health-seeking behaviour.

- **Shortage of staff**

Nurses are reported to be few and not having time to efficiently provide all the services required, such as giving clients health education. Inadequate service provision contributed to clients not being willing to visit such health facilities and eventually to poor health-seeking.

*I am near the following clinics Okahenge, Oipanda, and Omududu. Still, when one is referring the patients to those clinics, they will ask you to refer them to Omududu, even if it is far; they tell you they will wake up very early and go because before 10H00 they will be attended to. Again, Omududu clinic has enough nurses. At some clinics, you may find a nurse that is allocated to the immunization, and then sometimes is going to sort health passports at the reception, and the very same nurse is the one screening the patients while others are allocated at the CDC or the maternity. Angolans are also treated here; the villages are so many, and we have only one clinic. People blame the nurses, but the problem is that nurses are very few and are very much loaded. Nurses may only be two on duty attending to everything, even emergencies, immunization CDC, maternity and attending for those who came for treatment.” P3: HEW-FGD7*

*“I think the challenges are from both sides for the healthcare providers, and our problem is that our hands are few also, we try our best to educate our people. Still, because of our limited number, maybe we don't do much when giving education. You can't just say I told them once; they understand; it is an ongoing process. Even during discharge, we are supposed to have a session with parents who are being discharged, but we don't do it; we are very few.” P2: Doctor-KI*

- **Nurses' attitude**

Some nurses are reported to be rude, scolding patients and making them seek help from distant health facilities where they once felt welcome.

*“When one mother/caregiver brought a child that had diarrhoea, the nurse, without asking anything, just started blaming the mother, saying that the child is sick because of the food they are giving the child. She talked rudely, and that mother left without medication; the child was not treated anymore. The following day, I went to their house and asked her what she would give the child, but she replied that she would try home remedies. Unfortunately, this child had a fever, and the diarrhoea was very fast. I advised her to take the child to Engela hospital, but she said that at Engela hospital, several nurses also answered people rudely. She indicated that she would wait for two days to get some*

money and take her child to the Endola clinic. The Endola clinic is a bit far from where she stays". P1: HEW5

*"To be honest, some nurses are rude; instead of asking the client politely where they fetch their water or about handwashing practices, they will jump to conclusions. By telling the client things like: 'There is no way the child will not develop diarrhoea because of your unhygienic practices.' I think it was better if the nurse first finds out the client's practices."*

P3:HEW6

- **Overcrowding**

Health facilities are reported to be overcrowded and discourage parents from seeking help.

*"Sometimes the hospitals are crowded, and it also discourages the parents from taking the children to the hospital."* P2: HEW-FGD1

*"Sometimes hospitals such as Engela are overcrowded; it also can discourage one, just to think about those long queues."* P5: M/C FGD

- **Long waiting times**

Waiting time at the healthcare facility also contributed to poor health-seeking practices.

*"If you tell them about going to the clinic, they will only tell you about the queue; sometimes they complain about poor service provision. They also complain that the clinic does not open on time".* P1: HEW-FGD7

- **Inadequate service provision**

HEW indicated the need for certain health workers to be allocated for health education only since it is noted to have been given less attention among the health facilities in the district.

*"What we need most is when parents come to hospitals/clinics, for them to be given health education. It would be ideal if each clinic could have somebody responsible for providing health education on aspects of children under five's well-being and diseases. If we HEWs are trying to provide health education and nurses at the clinics and hospitals are doing*

*the same, it will be helpful to the parents. For example, when parents take their children to the hospital, they are given health education about diarrhoea. In the community, the HEWs are talking about diarrhoea; if that is being practised frequently, I think it will improve the home management of diarrhoea. Maybe we also need more days to have time and discuss with these parents; however, when you request them to come for a meeting, most of the parents will not come; therefore, people at the clinics also need to emphasize giving health education.” P1: HEW-FGD7*

*“I think my colleague is right; the clinics need somebody who is responsible for giving health education because when us HEWs are telling them, they think we do not have enough knowledge. I noted that when they are told at the clinic, and one happens to make a mistake and tell them something different, they will not hesitate to tell you that is not what they were told at the clinic. I think the messages they get at the health facilities are more powerful than the ones we give.” P2: HEW-FGD7*

#### **4.5.3.1.3 Sub-theme: Mother/caregiver-related factors**

Factors such as parent/caregiver ignorance, negligence, alcohol consumption, lack of urgency, and elderly persons’ influence on multiple tasks and practices contributed to health-seeking behaviour.

- **Ignorance**

Health workers indicated that most parents are ignorant; despite the advice they are given at the healthcare facility, they tend to ignore it.

*“I would say that most of the experience I have with the parents/caregivers is that, despite the advice we give them, they will repeat these mistakes repeatedly. They also don't follow instructions when you want to treat them or when you are treating them; therefore, they keep coming back with the same complaint of diarrhoea; it does not change.” P1:Doctor-KI*

*“There are times we tell them to go to the hospital and do so right away, but it all depends on an individual; there are also those who, when you tell them to go to the hospital, they will tell you that they will wait and see if the child will improve.” P1: HEW-FGD2*

- **Negligence**

A key informant also indicated that child mortality has occurred due to caretaker negligence.

*“The second child that came across this year died because of pure negligence of the caretaker. The child was brought to the clinic, and we gave ORS, but they did not do anything when they went home. By then, the mother was admitted; therefore, the child was being taken care of by her aunties, and she ended up dying”.* P6: Nurse-KI

*“Sometimes the child has diarrhoea, but people will say possibly the child has eaten something that is not good, and the child will be ok, there is no need for treatment at the hospital.”* P1: HEW-FGD2

*“Some tell us that they went to the hospital, but diarrhoea continued, then my mother informed me to go for perineal examination and cutting. Hmm, what does one do? You give health education about diarrhoea but don't mention anything related to perineal examination and cutting.”* P6: HEW-FGD6

One mother or caregiver indicated that she did not bring her child on time.

*“The child started with diarrhoea a week ago, but I have not done anything because I thought the child is going to get better.”* M/CFGD3

- **Alcohol consumption**

It also emerged from FGD that the parents or caregivers that go to shebeens delay health-seeking since parents may fail to take the child to the healthcare facility because they don't have money, although they always seem to have the cash to buy alcohol.

*“The Shebeens/Cuca-shops are also a problem around here, and sometimes I may say that I don't have money to take the child to the hospital, but I have money to go and buy beer; this is very common among young parents.”* P2: M/C FGD2

*“The distance to the health facilities, when the mother is drinking "tombo", they ignore the child's diarrhoea; they will keep postponing to take the child to the hospital, saying they will wait and see if the child is improving.”* P3&6: HEW FGD3

- **Lack of urgency**

It was indicated that parents'/caregivers' lack of urgency to take the child to a healthcare facility contributed to delayed health-seeking.

*"I noticed that a lot of children are brought in by grandmother's those children have absent parents. They will tell you the mother is somewhere else. Older people lack the urgency to bring the children to the hospital. I came across one poor child whose neighbour had to intervene and bring the child to the hospital."* P2: Doctor-KI

*"In the villages, people who are not feeling well/sick are not taken to the hospital immediately, or the same day. We are told to wait and see how the condition will progress. (ohaku tiwa, ino ya manga koshipangelo; taleni ngaa nena eshi ta uhala po; mongula tu yeni koshipangelo)." P3:FGD5*

- **Elderly influence and social networks**

With the parent or caregiver, HEW alluded that the elders tell them that children can become sick because their parents possess them; therefore, perineal cutting needs to be practised to prevent and manage diarrhoea.

*"We follow those traditional practices whereby the elders tell us that the child is sick because the parents possess it. I saw a child that is ok now after the parents went for perineal cutting."* P3:M/C-FGD 3

*"When you ask parents who went for perineal cutting who advised them to do so, they would say it is their grandparents."* P9: Nurse-KI.

*"Even if the child is admitted, we leave them in the hospital and go for perineal cutting since most of the time, and the elders advise us to do so. People around us will ask you whether there are no elders from the house where you come from. Go to the elders so that they can determine what is causing the child to have diarrhoea. They will tell you that even if the child is given medication, the child will not be ok, so one can quickly go for cutting and come back."* P1: HEW FGD2

*“Related to diarrhoea management and prevention, the elders know the symptoms that indicate that the child has been possessed; therefore, they will inform you to go for perineal examination. Sometimes diarrhoea has not yet started, and the elders will tell you to go for perineal cutting. Even if the child is being breastfed and starts to become very thin, we are advised to go for perineal cutting to manage and prevent diarrhoea.” P4: HEW FGD2*

*“Myself, I do perform the perineal cutting. The elders tell us to go for cutting when the child has diarrhoea and vomiting. Sometimes the child has diarrhoea only, sometimes only vomiting, or maybe the child is always sick. In Oshiwambo culture, the elder says the parents possess the child. Therefore, the parents need to go for a perineal examination and cutting. When parents go for cutting "eemhalo" it is believed that the child gets better from there." P4: HEW FGD3*

*“I will tell what I did; my mother used to tell me to go for perineal cutting when my child develops diarrhoea. She informed me to go, and I just went somewhere else and returned and informed my mother that the lady was not at home. The second child also started having diarrhoea, again, my mother told me to go, but I did not go. When the third child developed diarrhoea, that is when I decided to go. I went for cutting; it was very painful, but the diarrhoea stopped." P3: HEW FGD1*

One of the parents or caregivers also indicated that sick people in the villages are not taken to hospitals for treatment right away since they are advised to wait and see how the disease progresses.

*“At the villages, people who are not feeling well, are not taken to the hospital right away or the same day. We are told to wait and see how the condition will progress. (ohaku tiwa, ino ya manga koshipangelo, taleni ngaa nena eshi ta uhala po; mongula tu yeni koshipangelo)”. P6: MC-FGD5.*

- **Poor knowledge and understanding**

The parent or caregiver also indicated that lack of understanding contributes to delay in health-seeking; he alluded that when a child is not feeling well, they are discouraged from taking the child to a healthcare facility but instead want to wait and see.

*“Sometimes is lack of understanding, we have these traditional beliefs about when the child becomes ill, they will tell you to wait and see, the parents may not take the child to the hospital because of poor understanding.” P1: M/C-FGD1&5*

*“We need clinics in our areas and health workers who make meetings and give us health education. Maybe we will have a better understanding, and we may change; we need to be encouraged to take our children to the hospital because our heads are stuck in the tradition.” P2: M/C FGD2*

*“Some do come early, some not; maybe as a result of poor understanding they keep waiting with the hope for the child to get better and when they reach the hospital the child is exhausted” P6: Nurse-KI.*

*“We have these traditional beliefs; when the child becomes ill, they will tell you to wait and see. The parents may not take the child to the hospital because of poor knowledge and understanding.” P3: Nurse-KI*

- **Multiple tasks related to taking care of children under five years old**

In addition, HEW indicated that older people who are caretakers of more than one child face challenges when one child needs medical attention since there might be no one to take care of the other children.

*“When we do home visits and ask the caregivers why not taking the child to a healthcare facility, as the older person, they always give the excuse that there is no one to stay with the other children. Many children in our villages are under the care of older people, and it is not only one child; it can be many of them. If older children are at school, some caregivers will tell you that they are waiting for the other children to come back from*

*school, but after school, it might be impossible to find the clinic/hospital open; it will be after working hours*". P4: HEW FGD5

- **Practice related to diarrhoea management**

In addition, during FGDs with HEWs and parents or caregivers and key informants, interviews indicated that perineal cutting is practised as part of managing diarrhoeal disease among children, hence hindering the mother or caregiver from seeking help on time.

*"When the child started with diarrhoea, I went for perineal cutting, but the child did not get better, then the old lady that cuts told me that the father might be the one that possesses the child."* P5: M/C-FGD4

*"I also learned that if a child has diarrhoea that lasts for a very long time, it is beveled and clear that the parents possess the child. Therefore, they go for perineal cutting, which is when the child can get better"*. P2: HEW-FGD1

A key-informant indicated that many parents whose children are suffering from diarrhoea seek treatment from traditional healers based on the belief that they possess the children, hence they require perineal cutting.

*"Yes, I see many parents when their children suffer from diarrhoea; they go to traditional healers for perineal cutting. Parents with children suffering from diarrhoea will hear people saying the parents have "omushila" or the child is vomiting. You hear people advising you to go for a perineal examination, saying that you may have "omushila" for perineal cutting. Therefore, when the child has diarrhoea, vomiting, or fever, some people will advise you to go to a traditional healer for perineal cutting at home."* P4: Nurse-KI

Furthermore, health workers indicated that some parents or caregivers do take their children to health facilities for treatment on time. But, for example, some don't do anything.

*"Some bring them on time, but some bring them after three days, but if you ask them what they have done for the child, they will say they have done nothing as they thought the diarrhoea would stop"*. P8&9: Nurse-KI.

*“Some parents or caregivers do come early. However, some do manage their children at home, maybe due to long distances, some people come from very far possible because of the distance when they come to the clinic the child is exhausted.”* P6: Nurse-KI

One mother/caregiver whose child was admitted to the hospital suffering from diarrhoea during the data collection period indicated that she went for perineal cutting when her child started suffering from diarrhoea. Since the child did not get better, she decided to take the child to the healthcare facility.

*“When the child started with diarrhoea, I went for perineal cutting, but the child did not get better. So I took the child to the hospital but still, the child did not get better; I went back to the lady who cuts and then told me that the father might be the one who possessed the child. So when I informed the father, he refused to go, that is when I decided to bring the child to the hospital again.”* P3: M/C-FGD2.

#### ***4.5.3.1.4 Sub-theme: Service accessibility***

Physical accessibility factors such as physical distance to health facilities, shortage of health facilities, lack of transport money, and clinics not functioning over weekends emerged to be factors contributing to delayed health-seeking.

- **Physical distance to the healthcare facility**

The interviews with health workers revealed that some people reside very far from health facilities.

*“Some do come early, some do not, maybe due to long distances; some come from very far away. It is possibly because of the distance that they keep waiting with the hope for the child to get better and when they reach here at the healthcare facility the child is exhausted.”* P, P6&9: Nurse-KI

*“ I have noticed that most parents with a child suffering from diarrhoea will come in after a week, three days, four days, or five days. Sometimes they come when it is too late as the child is severely ill, severely dehydrated because they come from very-very far or maybe they went to a traditional healer at first.”* P1: Doctor-KI:”

*When we do home visits and ask caregivers why they do not take the child to a healthcare facility, they inform us that most clinics are very far. People will tell you they don't have transport money."* P4: HEW FGD5

*"Maybe about 60% come on time; however, there are those who delay with the reason that they are coming from very far or because of going to traditional healers"*. P4: Doctor-KI

Parents or caregivers indicated that distance to health facilities was a problem.

*"Distance to the clinic/hospital is a problem; the hospitals are very far."* P1-3: M/C FGD 2&3

- **Shortage of health facilities**

HEW indicated that because of the shortage of health facilities in the area, many people walk long distances to the health facilities

*"Let the clinics be built in the villages and let the nurses at the clinics also work night duty so that if our children become sick, one can consult the health workers* P1: M/C-FGD1.

*"We only want clinics in our villages or nearby, and health personal coming to us and give us health education."* P5 M/C-FGD2

*"At this side of the border, we need a clinic because, for many people, the hospitals and clinics are very far, and most people travel by foot."* P2: HEW-FGD1

*"At Onamunama, there is only one health centre in the area, and all villages around this area go to that clinic."* P1: M/C-FGD1&3

- **Lack of transport money**

Parents or caregivers also indicated money for transport to be a problem. (see quotes below).

*“Money is a problem for some of us. We are from Okanghudi; the clinic is very far from Onamunama. There is only one health centre in the area, and all villages around this area go to that clinic”.* P1: M/C-FGD1&3

*“Sometimes the problem is money, and sometimes there is just no transport or money to pay for transport.”* P5: FGD5

HEW also indicated that transport money is a problem

*“The distance to the hospital, hospitals are very far; when we advise parents to take the children to the hospital, they tell us they don't have money. Money is also a problem around here.”* P1: HEW-FGD1

- **Clinics not functioning over weekends**

Mothers or caregivers also indicated that closing health facilities over the weekend have contributed to poor health-seeking behaviour.

*“Sometimes, if the child becomes sick on Friday afternoon, by then, the health centre will be already closed, and they don't open over the weekend. I will just be at home waiting for the clinic to open on Monday because there is nothing I can do. When I go with a weak child to the hospital, they will start blaming me”.* P6: M/C-FGD 2

#### 4.5.3.1.5 Sub-theme: Characteristics of disease and symptoms

Symptoms such as fever were indicated to have necessitated the mother or caregiver to take the child to a healthcare facility

- **Fever**

Parents or caregivers indicated that even though the traditional practice is commonly practised in their areas when a child is suffering from diarrhoea or vomiting but is also feverish, some community members advise the parents to take their children to health facilities. See the quote below.

*Yes, I see lots of parents; when the child is sick, they go to traditional healers. Sometimes the child is suffering from diarrhoea, but you will hear people saying the parents have "omushila" or the child is vomiting. People will advise you to go for a perineal*

*examination, saying that possible one has "omushila" for cutting. However, if the child has diarrhoea, vomiting, and fever, some people will advise you to seek help at the hospital. P4: M/C FGD2*

On the contrary, one of the participants indicated that she was advised to consult a traditional healer for her child, which was feverish and vomiting.

*My firstborn was feverish and vomiting, and I was told to take the child to traditional healers; when I went to the traditional healer, she looked at my perineum and told me nothing was wrong. She further indicated that the problem could be with the father. However, I lost contact with the father, and I stayed with my child until she was ok; now, she is a big girl. P1: M/C FGD 2*

#### *4.5.3.2. Theme 2: Home management of diarrhoeal disease*

According to a study conducted by Omale et al. <sup>(148)</sup> looking at the parents' knowledge, attitude and practice of home management of diarrhoea among parents of under-fives in Samaru, Kaduna State, Nigeria. Parents were found to have a high awareness of ORS; however, the actual practice of home management of diarrhoea was relatively low. Furthermore, it was recommended promotion of positive home management of diarrhoea to include methods of fluid and electrolyte replacement, continuous nutritious feeding and zinc supplementation for children with diarrhoea.

Based on the narratives from the FGD with the parents or caregivers, HEWs, and key informants (traditional healers), various methods of managing diarrhoea based on the perceived cause emerged in the current study. Two sub-themes, such as traditional practices and biomedical care as part of diarrhoeal management, emerged from the interviews.

##### *4.5.3.2.1 Sub-theme: Traditional practices*

Traditional related factors such as perineal cutting, stretching the child's mouth, dog seeking, seeking insects to suck blood, stopping breastfeeding, a mixture of flowers, enema, and giving no treatment emerged as practices used for diarrhoea management. Parents/caregivers also indicated that the management of diarrhoea depends on the perceived cause of diarrhoeal disease. They noted that some types of diarrhoea are believed to can not be managed with western medicines.

- **Perineal cutting**

Perineal cutting is commonly practised in the region hence delaying parents or caregivers from seeking help on time. In addition, participants indicated that diarrhoea could occur due to a child being possessed by their parents. For instance, diarrhoea is believed to be caused by a piece of skin on the parents' perineum found between the vagina and anus in females or between the scrotum and the anus in males, papules found in the mother's vagina, and skin tag around the mother or father's anus. For this reason, a child who is perceived to develop diarrhoea because of being possessed by their parents, parents, and father undergoes perineal examination and cutting as part of diarrhoea management.

*“If the child has diarrhoea, the first thing the mother should do is to go look for the ladies (traditional healers) that cut "eemhalo". The child may have diarrhoea because the parents are the ones causing the problem by having "oshipa" (skin) or "eemhalo" (papules) or omushila (a tail) at their perineal area P1: M/C-FGD1.*

*“When the mother is cut, but the child is still not ok, the lady will ask you the whereabouts of the father and whether he was also cut or not; from there, if the father was not cut, then the mother should inform the father to go for cutting.” P1: HEW-FGD1*

*“If the mother is the only one that has been cut and the child is still not ok, the elders that know things very well will instruct her to inform the husband to go for perineal cutting.” P2: HEW-FGD2.*

*A type of diarrhoea contains milk; that type does not go to the hospital. Even if you take the child to the hospital, the child will not improve; maybe you do it after being treated traditionally. Believe me, if you go for the traditional treatment, they cut you at the perineum; that is when the child gets better.” P1: M/C-FGD4*

*“If the child is passing stools that contain milk, that type of diarrhoea is a result of being possessed by the parents one has to for perineal cutting but still if the child is not getting better take the child to the hospital.” P5&P3: M/C-FGD6*

*“There is a type of diarrhoea that is not being treated at the hospital; that type of diarrhoea comes as a result of the child being possessed by the parents. P2&P3: TH.*

*"It is like this; the type of diarrhoea that occurs when a child still being breastfed and develops diarrhoea with stools that contain milk and vomiting milk can only be managed by the ladies that know how to perform the perineal cutting." P4: M/C-FGD1.*

When a child is regarded as being possessed by the parents, it is believed that even if they are taken to a health care facility, they will not improve. Therefore, the most important part of managing that type of diarrhoea is for the parents to go for a perineal examination and cutting; and if the child does not improve after that, that is when they can think of taking the child to the healthcare facility.

*"Yes, "oshipa", or "eemhalo", or "omushila" can kill your child. Therefore, if your child has diarrhoea that worries you, you should try your best to go to the ladies that can cut, but if diarrhoea continues after the mother has been cut, then try to take the child to the hospital." P2: M/C-FGD1.*

Key informants also confirmed the practice by indicating that some parents go to health facilities asking for gloves to go and perform the perineal cutting.

*"Yes, some of them, before they come to the clinic, first go to a traditional healer, especially for the kids suffering from diarrhoea; they think the haemorrhoids or whatever is what causes diarrhoea." P1: Nurse-KI*

*"They do come to our health facilities asking for gloves to go perform the perineal cutting. However, we inform them that we don't give gloves to people going for perineal cutting; we are not taught about those things if you want to have gloves, buy them from private pharmacies. P6: Nurse-KI*

*"I remember in December a child brought by the mother was very dehydrated; after probing, that is when the mother came to admit that she went for perineal cutting." P7: Nurse-KI*

*"People around here practice perineal cutting, and we are aware of that since they come to us asking for gloves, but we inform them that we don't give gloves to people who are going for perineal cutting. If they want gloves, they should buy them from private pharmacies. P4 &P9: Nurse-KI*

*“What I have noticed most of them will come in ranges of a week, but it ranges some of them some will come after three days four days five days sometimes depending on diarrhoea they will come in when it is too late as the child is severely ill severely dehydrated just because they come from very-very far or maybe they went to a traditional healer at first” P2: Doctor-KI.*

- **Scratching the child’s mouth**

Traditionally, it is also believed that the child could have possessed themselves. Children who possess themselves are believed to have papules in their mouths that need to be removed for them to recover. If that is suspected, the child is taken to a traditional healer who knows how to scratch the papules.

*“Some of the parents still believe in children being possessed. The child possesses himself if there are papules on the insides of their cheeks. The child is taken to those who know those things very well, and they check in the child's mouth. The papules in the child's mouth are scratched with the finger to cure diarrhoea and prevent it from recurring” . P4: HEW-FGR2*

*“Concerning treating diarrhoea among children under five, I treat their mouths. I remove small papules that are commonly found in children's mouths that cause diarrhoea; those things are found on top of the skin in the mouth. Here (pointing to his cheeks) on the membrane lining the jaws and the cheeks inside, they are so superficial to the extent that even if you remove them, there will be no wounds in the mouth. If you just eliminate them even if the child was not eating, they will immediately start to eat. You find at the hospital children being admitted to the ward due to malnutrition. Children who have those things develop malnutrition because they cannot eat; when they have those things I am talking about, they cause pricking pain. But if I remove them, the child will already start to eat by the time they reach home.”P4: TH*

*“Yes, the children can be very weak under such circumstances. If taken to the hospital, they are put on a drip, and they improve. But equally, even if a very weak child is brought here, not even opening their eyes—if I remove them immediately, the child will open them*

quickly, and if the mother has come with the child's food, they will start to eat immediately". P3:TH

- **Dog seeking**

*"When a child is having diarrhoea or passing stools, but the rectum is also coming out, that child is considered possessed by a dog. A dog and some beans are sought; the beans are cooked and given to the child to eat. The mother then has to imitate a dog's barking, then the dog is killed and cooked, and the child must eat the meat. The broth is put on the baby's tongue if the child is too young to eat meat. If a dog is not found, the mother is required to pound "eenhanga"(seeds of certain plants) with a pestle and mortar (see picture below), and as she is pounding, she must bark like a dog."* P4: M/C-FGD5



Figure 30: Ovambo girl with a pestle and mortar used to pound millet and traditional medicine (source: Researcher's own picture).

- **Insects sucking blood**

Traditional healers indicated that diarrhoea could also be caused by what is called "endjadja" a word meaning 'intestine'. According to the traditional healer, "endjadja" causes the child to develop diarrhoea, epilepsy, paralysis, weakness of arms and legs, and convulsions.

*"Many things can cause diarrhoea; management of diarrhoea depends on what is causing it, and it could be many things. A child can have diarrhoea as a result of "endjadja". "Endjadja" can cause many things in a child such as diarrhoea, epilepsy, paralyzes, or weakness of an arm and leg such things." P1: TH*

Conditions caused by endjadja are believed not to require western medicine but must be managed traditionally only.

*"Conditions such as "endjadja" sometimes make the child have convulsions, Epilepsy is only treated traditionally, not at the hospital, and you can take the child to the hospital with epilepsy or "endjadja" but believe me, the child will not get better." P2:TH*

Management of "endjadja" requires making small incisions on the child's skin, and an insect is sought to suck out the blood from the incisions.

*"Management of "endjadja" requires traditional healers like me (endjadja ohali pangwa kwaava ve shii oku li lya ngaashi aame). Small incisions are made on the child's skin so that blood comes out. Before HIV, we used to suck the blood with our mouth, but nowadays we make use of those big insects that resembles locust to suck out the blood." P1:TH*

HEW indicated that the practice of traditional healers sucking blood had been abandoned based on the prevalence of HIV.

*"Nowadays, because of HIV/AIDS, the blood is no longer sucked by the traditional healer, but they use insects that are normally found on tomato plants; they are placed at the bleeding wounds to suck the blood." P4: HEW 2*

- **Stop breast milk**

It is believed that breast milk gets spoiled when a breastfeeding mother falls pregnant and or when a child that is regarded as over the age of breastfeeding still does so; in both of these cases, it is also believed that the mother's milk can get spoiled and cause diarrhoea. Therefore, if diarrhoea is perceived to be caused by this, breastfeeding must be stopped.

*Breastfeeding when one is pregnant is also a problem. It happened to me, and I was breastfeeding my second-last-born child, unaware that I was pregnant. I only realized it when my child started to have diarrhoea. When I took the child to the hospital, it did not help, and that is when the elders told me to stop breastfeeding or otherwise I would kill the child.* P1: M/C-FGD2

*"We hear a lot about diarrhoea occurring when a pregnant mother is breastfeeding the child. I believe it is true because those babies become very thin, not looking good; they also develop diarrhoea because the milk is no longer good."* P1&P4: M/C-FGD3&5

*"Like myself, my child had diarrhoea frequently, and I was told that possibly my breast milk had gone bad and was advised to stop breastfeeding."* P3: M/C-FGD5.

HEW also indicated that community members believe that breastfeeding when pregnant leads to diarrhoea

*"It is also believed that if the mother is breastfeeding when she is pregnant, the child develops diarrhoea."* P2: HEW-FGD3

*"They say if you breastfeed a child whose age is over the age for breastfeeding, they develop diarrhoea, and people may say it is because the child is still being breastfed. Under such circumstances, parents are advised to stop breastfeeding. But quite interesting—when the mother stops breastfeeding, the diarrhoea stops".* P5: HEW-FGD3

- **Mixture of flowers**

Participants indicated that diarrhoea is common when plants are flowering; hence, people believe that flowering plants can cause diarrhoea. When a child is suffering from diarrhoea that is perceived to be caused by flowering plants, it is managed by applying flowers to

the mother's breast or putting flowers in water and giving the child to drink. Thus, some practices can be carried out to prevent children from developing diarrhoeal diseases related to flowering plants.

*“During the time when plants are flowering, you will find people going into the bushes collecting flowers to give to the child to prevent or treat diarrhoea. The children are given the flowers to eat or are an enema with water mixed with the flowers”.* P2: M/C-FGD2

*“That type of diarrhoea is treated with flowering plants. If you are breastfeeding, you just go into the bush and look for a plant called "omupupwaheke", take some flowers and apply them to your breasts and the child's abdomen; then the child will be ok. For children that are not breastfed, flowers are put in the water and given to the child to drink, or a spoon can be used. When the child finishes the treatment, they will ok; you can ask all over this area, and people will tell you the same thing.”* P2: M/C-FGD6.

A child that is suffering from diarrhoea can undergo different types of management. For example, one of the participants whose child was admitted suffering from diarrhoea during the data collection indicated that she first took her child to the hospital. Still, since the child did not improve, she was told about the type of diarrhoea caused by flowering plants. Therefore she gave the child a mixture of flowers which also did not help. She then went for perineal cutting; the father went for perineal cutting when the child did not improve. Finally, she also indicated giving homemade solutions, but all did not help; therefore, she returned the child to the hospital, and he/she was hospitalized.

*“My child started with mucoid diarrhoea, I took the child to the hospital, but when we returned home again, diarrhoea restarted. This time it was watery diarrhoea with greenish mucus, and I was informed it resulted from plants flowering. Then I gave the child a mixture of floors. After three days, the diarrhoea became watery; my mother took me to an elderly lady to examine my perineum to determine if I had possessed the child. After examining my perineum, she cut me, but there was still no improvement. Then the child's father also went for a perineal examination, but he was informed that he did not have anything wrong. After that, we decided to give the child "omahangu" solution, but*

*the diarrhoea did not improve. Therefore, I decided to bring the child back to the hospital, and then they admitted the child."* P3: M/C-FGD6.

- **Enema**

When diarrhoea is perceived to happen as a result of a child eating bad food or because the child was playing under the sun, as well as other types of diarrhoea that are perceived to require home management, parents prepare different solutions and give enemas.

*"Some give the children an enema with the roots of "elyata" a plant that grows in the area, as well as other herbs. They boil the water together with the roots of that plant and give it to the child as an enema".* P3: HEW-FGD6

Children who are perceived to be suffering from diarrhoea because of other possessions are given an enema with bird or dog faeces.

*"My baby had diarrhoea that lasted for three months. I kept buying medicine, but when I came home, the elders told me that the father's ancestors' spirits had possessed the child and that I should give the child an enema with birds' faeces. I went picking them under the trees and in the birds' nests. You can use the faeces of birds or of a dog faeces. They must be added to water, and the water is used as an enema. From the time I gave my child that enema, I have not seen the child having diarrhoea, even the body of that child is now looking ok, but before that, the child had diarrhoea now and then."* P3: M/C FGD5

Furthermore, before considering taking the child to a healthcare facility, parents or caregivers practice home management by giving the child an enema using various solutions.

*"We also give an enema with water and add a little bit of salt. Or we take the flower, add a bit of salt, mix it with a bit of water, and insert the mixture in the child's anus, and if the child is not getting better, we take the child to the hospital.* P2: M/C FGD1

*"Parents first try to give an enema to children suffering from diarrhoea, most of the time even if the child is passing bloodstained stools. They will keep postponing taking the child*

*to the hospital and say they will take the child to the hospital tomorrow, and then tomorrow, again they will say it is tomorrow". P4:HEW-FGD1*

*"People go into the bushes looking for flowers to give to their children to prevent them from developing diarrhoea or to treat diarrhoea. The flowers are put in the water for children to drink, or the children are given the flowers to eat or given an enema with water mixed with the flowers" P2:HEW- FGD1*

HEW also indicated that diarrhoea that is perceived to be caused by parents possessing their children could also be managed by giving the child an enema with certain herbs.

*"If children are passing diarrhoea that contains milk, besides the parents going for perineal cutting, sometimes we also give an enema with okapata which is very effective."*

P1: M/C-FGD7

- **No treatment**

Some participants indicated that they do not do anything when a child suffers from diarrhoea; they wait and see.

Diarrhoea is perceived to be caused by teething; in this case, it does not require any treatment.

*"We have to believe because these traditional beliefs are in our blood. We also see children that have diarrhoea after a short period; you find they are growing teeth, and when the tooth is about to come out, you again find the child having diarrhoea and fever."*

P3: HEW-FGD4

*"I took note most of the times when the child has diarrhoea, they will tell you the child is growing teeth. When you ask them what they have done for the child, they will tell you they have done nothing since they do not have a problem because they are growing teeth".*

P3: HEW-FGD4

- **Other solutions**

It was brought to light that various solutions are used as part of home management of diarrhoea amongst children under five. For example, things like "omahangu" flour, cake

flour, “ongava” (malt), and brown bread flour mixed with water or a cool drink (Coca-Cola) are used to manage diarrhoea.

*“Some use “omahangu” flour mixed in water, and they give the child.”* P2: HEW-FGD3

*“Some use cake flour mixed in water the child is given to drink.* P2&P3: HEW-FGD3

*“Some use "oufila wongava" a type of malt that is mixed with water and given to the child to drink. Some give an enema with the fluid mixed with the leaves of "omholokosho” (a particular type of plant in the area)* P5: HEW-FGD5.

*“Some parents use herbs called "okapata" that are pounded with a mortar and pestle, then water is added, and the mixture is given to the child. Some parents use the roots of a plant called "omushelele" that also helps if a child has diarrhoea. These are boiled and given to the child to drink”.* P2: HEW-FGD2

*“Some give brown bread flour. It is strong; it will stop diarrhoea; some mix the flour to make bread with water; it is believed to stop diarrhoea.”* P4: HEW-FGD4

HEW indicated that Coca-Cola is commonly used to treat diarrhoeal disease.

*“Some use a cool drink like Coke with bread. The child is given Coke to drink and bread to eat; they say that helps stop diarrhoea”.* P3- P5: HEW-FGD2, 3&5

*“Some people add salt to coke and give the child. They say Coca-Cola stops diarrhoea.”* P7: HEW-FGD2&6

One HEW indicated that different herbs effectively manage diarrhoeal disease. Therefore, she proposes that those medications be researched so that community members can be advised on what is effective.

*“According to my views, we need you to take this up. There are so many helpful herbs, but they are not researched upon. Please inform those responsible so that they can start researching the effectiveness of the plants around here in managing diseases.”* P1: HEW-FGD6

#### **4.5.3.2.2 Biomedical care**

Oral rehydration solution prepared by boiling water and adding salt and sugar, as well as ORS sachets, are given for children suffering from diarrhoeal disease, or diarrhoeal medications can be bought at a pharmacy, or the child can be taken to a healthcare facility for treatment.

- **ORS**

The mother or caregiver indicated preparing oral rehydration solution for their children suffering from diarrhoea. The oral rehydration solution combines clean water, salt, and sugar. The homemade solution consists of half a teaspoon of salt and six-level teaspoons of sugar dissolved in one litre of boiled and cooled water. However, parents who indicated giving this type of solution often indicate the wrong number of spoonfuls of sugar and salt to be added to the water solution.

*"Diarrhoea sometimes develops because the child has eaten bad food. With that type of diarrhoea, one can boil water, add a **little sugar**, and give the child," or when we have ORS sachets, we use those."* P3. M/C-FGD1

*"For normal diarrhoea, before I take the child to the hospital, I will first prepare a rehydration solution at home; I will put **eight spoons** of sugar and **a spoon of salt**, boil the water, put in one litre of water, and give the baby. But I don't know whether you know that there are different types of diarrhoea; there is the watery type, and another is mucoid and in-between. So maybe one can try to give ORS home remedies or take the child to a healthcare facility with those types."* P4: HEW- FGD3.

This practice is confirmed by the HEWs, who indicated that they provide ORS sachets to parents whose children are suffering from diarrhoea and train community members on preparing oral rehydration at home.

*"Some prepare ORS at home; we have trained them on how to prepare sugar and salt solution at home. We tell them to boil the water, let it cool down, put one litre of cool drink, add eight spoons of sugar and half a spoon of salt, and give the child the solution."*

P3& P5: HEW1-FGD3

- **Buying medications from the pharmacy**

One mother or caregiver indicated buying medications from the pharmacy to treat diarrhoea.

*“My child always has diarrhoea in the past two weeks; he has suffered from diarrhoea, and I just went to buy diarrhoea medications in the pharmacy.” P2: M/C- FGD6*

- **Health facilities**

Nevertheless, some parents indicated that when their children suffer from diarrhoea, they give ORS and take them to a healthcare facility.

*“When we take the children to the hospital, we can only be given ORS to go and prepare at home. That is the only medication we are given, and then we are told to breastfeed the child”. P1&3: M/C-FGD2*

Moreover, some parents indicated visiting the healthcare facility after trying something else.

*“If a child is suffering from diarrhoea, the mother should go for perineal examination, and she should take the child along so that the child can be examined as well. If they are found not to have problems, they can give home remedies; after all those efforts, if the child is still not ok, then the mother can take the child to the hospital.” P6: M/C-FGD1.*

**Title: Strategies for healthcare providers to enhance appropriate health-seeking behaviour among parents and caregivers for acute diarrhoea in children under five in the Ohangwena Region, Namibia**

**Aim of the study:** Develop strategies for healthcare professionals and health extension workers to enhance appropriate health-seeking behaviours of parents and caregivers of children under five in the Ohangwena Region in Namibia.

*Table 24 Merging of Qualitative and Quantitative results*

Objective	Findings	Conclusion	Justification of the evidence	Challenges
<p>1. Factors associated with the causes of diarrhoea</p> <p>❖ <b>Quantitative</b></p>	<ul style="list-style-type: none"> <li>✚ Demographic factors <ul style="list-style-type: none"> <li>▪ District (23%)</li> <li>▪ Residential (informal settlement 48%)</li> <li>▪ Age (Mother 31-49 yrs 33.6% and children 0-11 month 33.2%)</li> <li>▪ Occupants (5-10 people 22.1%)</li> <li>▪ Immunization status (not up to date 33.8%)</li> <li>▪ Weight of the baby (Underweight 27.1%)</li> </ul> </li> <li>✚ <u>Nature and characteristics of the household factors</u> <ul style="list-style-type: none"> <li>▪ Nature of the room (One 30.4%)</li> <li>▪ Nature of water (No tap water 46%)</li> <li>▪ Nature of the toilet (improved 16.7%)</li> <li>▪ Toilet (No toilet 30.5%)</li> <li>▪ Nature of communication (no access media 31.5%)</li> <li>▪ Nature of the building material (Corrugated iron/zinc 33%)</li> <li>▪ Water (No access 46.7%)</li> <li>▪ Hygiene (30.5%)</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>✚ Epidemiological factors associated with the cause of diarrhoea <ul style="list-style-type: none"> <li>• Demographic</li> <li>• Nature and household</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>✚ Epidemiological factors that are associated with the cause of diarrhoea (objectives 1, 2, and 4)</li> </ul>	<p>Health education (1, 2, 3,4)</p> <p>Advocacy (1,3,4)</p> <p>Community mobilization (1,2,3,4)</p>
<p>2. Perception of the cause of diarrhoea</p> <p>❖ <b>Qualitative</b></p>	<ul style="list-style-type: none"> <li>✚ <b>Sub-theme 1</b> Perceived <b>Beliefs</b> as the cause of diarrhoea <ul style="list-style-type: none"> <li>▪ Spiritual beliefs</li> <li>▪ Traditional and local beliefs</li> <li>▪ Myths</li> </ul> </li> <li>✚ <b>Sub-theme 2</b> Perceived <b>associated Factors</b> cause diarrhoea <ul style="list-style-type: none"> <li>▪ Hygiene practice</li> <li>▪ Water</li> <li>▪ Toilet</li> <li>▪ Lack of information</li> <li>▪ Residence</li> <li>▪ Feeding practices</li> <li>▪ Malnutrition</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>✚ Perceived cause of diarrhoea <ul style="list-style-type: none"> <li>• Beliefs</li> <li>• Associated factors</li> <li>• Diarrhoea mortality</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>✚ Perceived cause of diarrhoea (1, 2)</li> <li>✚ Lack of knowledge in terms of cause, management, and signs and symptom (1 and 3)</li> <li>✚ Negative attitude towards cause, treatment, and prevention</li> </ul>	<ul style="list-style-type: none"> <li>✚ Epidemiological factors that associated with the cause of diarrhoea</li> </ul>

	<ul style="list-style-type: none"> <li>▪ Seasonal</li> <li>✚ <b>Sub-theme 3</b> Perceived cause of <b>diarrhoea-related mortality</b> <ul style="list-style-type: none"> <li>▪ Lack of urgency</li> <li>▪ Complications</li> <li>▪ Poisoning</li> <li>▪ Malnutrition</li> <li>▪ Negligence</li> </ul> </li> </ul>		<ul style="list-style-type: none"> <li>✚ Poor practice in terms of prevention and management</li> <li>✚ Factors that are associated with seeking behaviour</li> </ul>	<ul style="list-style-type: none"> <li>✚ Perceived cause of diarrhoea (1, 2)</li> <li>✚ Lack of knowledge in terms of cause, management, and sign and symptom (1 and 3)</li> <li>✚ Negative attitude towards cause, treatment, and prevention</li> <li>✚ Poor practice in terms of prevention and management</li> <li>✚ Factors associated with seeking behaviour</li> </ul>
<p><b>3. Knowledge; attitude, and practice</b> regarding the cause</p> <p>❖ <b>Quantitative</b></p>	<ul style="list-style-type: none"> <li>✚ <b>Knowledge (inadequate 64%)</b> <ul style="list-style-type: none"> <li>▪ Definition of acute diarrhoea (54.6%)</li> <li>▪ Cause (Poor knowledge 44.3%)</li> <li>▪ Home management (Poor knowledge 59.7%)</li> <li>▪ Sign and symptoms (Poor knowledge 44%)</li> <li>▪ Prevention (Poor knowledge 48.6%)</li> </ul> </li> <li>✚ <b>Attitude (negative 72%)</b> <ul style="list-style-type: none"> <li>▪ Causes (59.8%)</li> <li>▪ Treatment (39.2)</li> <li>▪ Prevention (23.8%)</li> </ul> </li> <li>✚ <b>Practice (poor 40%)</b> <ul style="list-style-type: none"> <li>▪ Prevention (33.8%)</li> <li>▪ Management (31.3%)</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>✚ Lack of knowledge in terms of cause, management, and sign and symptom</li> <li>✚ Negative attitude towards cause, treatment, and prevention</li> <li>✚ Poor practice in terms of prevention and management</li> </ul>		
<p><b>4. Associated Factors with health-seeking behaviour</b></p> <p>❖ <b>Mixed methodology</b></p>	<ul style="list-style-type: none"> <li>✚ <b>Socio-demographic factors</b> <ul style="list-style-type: none"> <li>▪ Nature of residence (46.8%)</li> <li>▪ Age (18-30 yrs. 39%)</li> <li>▪ Number of House occupants (5-7 people 48.4%)</li> <li>▪ Practice perineal cutting (40%)</li> </ul> </li> <li>✚ <b>Sub-theme 1 Cultural factors</b> <ul style="list-style-type: none"> <li>▪ Traditional beliefs</li> <li>▪ Traditional healers</li> <li>▪ Traditional medicine</li> <li>▪ Stereotyping</li> <li>▪ Victimizing</li> <li>▪ Teething</li> <li>▪ Spiritual beliefs</li> <li>▪ Family and social networking</li> </ul> </li> <li>✚ <b>Sub-theme 2 Health services factors</b> <ul style="list-style-type: none"> <li>▪ Nurse attitude</li> <li>▪ Overcrowding</li> <li>▪ Waiting time</li> <li>▪ Shortage of staff</li> <li>▪ Inadequate service provision</li> </ul> </li> <li>✚ <b>Sub-theme 3 Mother or caregiver-related factors</b> <ul style="list-style-type: none"> <li>▪ Ignorance</li> <li>▪ Negligence</li> <li>▪ Alcohol consumption</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>✚ Factors that are associated with seeking behaviour <ul style="list-style-type: none"> <li>▪ Socio-demographic factors</li> <li>▪ Cultural factors</li> <li>▪ Health services factors</li> <li>▪ Mother or caregiver-related factors</li> <li>▪ Physical accessibility</li> <li>▪ Nature of symptoms</li> </ul> </li> </ul>		

	<ul style="list-style-type: none"> <li>▪ Lack of urgency</li> <li>▪ Elderly influence &amp; social networks</li> <li>▪ Lack of responsibility</li> <li>▪ Poor knowledge and understanding</li> <li>▪ Multiple tasks</li> <li>▪ Practice</li> </ul> <p>✚ <b>Sub-theme 4 Physical accessibility</b></p> <ul style="list-style-type: none"> <li>▪ Distance</li> <li>▪ Shortage of health facilities</li> <li>▪ Transport</li> <li>▪ Service delivery? Clinic not open</li> </ul> <p>✚ <b>Sub-theme 5 Characteristics of disease and symptoms</b></p> <ul style="list-style-type: none"> <li>▪ Fever</li> <li>▪ Blood in stools</li> </ul>			
<p>1. Home management of children</p>	<p>✚ <b>Sub-theme 1 Traditional practices</b></p> <ul style="list-style-type: none"> <li>• Perineal cutting</li> <li>• Scratching the child's mouth</li> <li>• Seeking a dog</li> <li>• Seeking insect sucking blood</li> <li>• Stop breastfeeding</li> <li>• Mixture of flowers</li> <li>• Enema</li> <li>• No treatment</li> <li>• Other solution</li> </ul> <p>✚ <b>Sub-theme 2 Biomedical care</b></p> <ul style="list-style-type: none"> <li>• ORS</li> <li>• Medication from pharmacy</li> <li>• Health services</li> </ul>			

#### **4.6 SUMMARY**

The findings from the study indicated that a combination of factors negatively impacts appropriate health-seeking behaviour amongst parents or caregivers in the Engela District in the Ohangwena region. The findings revealed a 23% prevalence of diarrhoea, which is very high compared to the countrywide prevalence of 17% reported in the NDHS.<sup>(23)</sup> In addition, the results indicated place of residence was statistically associated with diarrhoea prevalence. Children from the informal settlement were found to be over 36.42 times more likely to suffer from diarrhoea than children from other residential areas. The prevalence of children being underweight was relatively high; 66.8% of children were categorized as underweight based on WAZ. However, based on MUAC, only 40% were malnourished. Being underweight was more prevalent in an informal settlement; children from the informal settlement had a higher risk of 74.5% of being underweight than those from other areas. However, the observed difference was not statistically significant. Health workers perceived diarrhoea prevalence to be related to poor hygiene, not washing hands, lack of toilet facilities, defecation in the open, lack of water sanitation, lack of information, lack of exclusive breastfeeding, poor feeding practices, malnutrition, and seasonal changes. On the other hand, spiritual and traditional beliefs played a role in how some parents perceive the causes of diarrhoea among children under five. The study found that of most parents/caregivers, 64% had inadequate knowledge of the prevention and management of acute diarrhoea. Only a minority, 36%, had adequate knowledge. Similarly, 72% of parents or caregivers have a negative attitude about the causes, management and prevention of diarrhoeal. Nevertheless, more than half, 52% of parents or caregivers related to practice, were categorized as having moderate practice; however, only a small portion, 8%, was regarded as having good practice related to management and prevention of diarrhoea. 61% of parents reported practising perineal cutting as part of prevention and management of diarrhoea, 27% indicated not giving any treatment, 10% indicated taking the child to a traditional healer, 4% took the child for prayers, and 3% indicated stopping breastfeeding.

Furthermore, socio-demographics, cultural factors, health service characteristics, parent-related factors, and physical accessibility to health facilities contributed to health-seeking

behaviours. The next chapter will present the conceptualization for developing strategies to strengthen health-seeking behaviour in the Ohangwena region in Namibia.

## **CHAPTER 5**

### **CONCEPTUAL FRAMEWORK FOR STRATEGY DEVELOPMENT TO PROMOTE HEALTH AND ENHANCE APPROPRIATE HSB AMONG PARENTS AND CAREGIVERS OF CHILDREN UNDER-FIVES WITH ACUTE DIARRHOEA IN THE OHANGWENA REGION, NAMIBIA**

#### **5.1 INTRODUCTION**

During Phase 1 of the current study, results revealed a high prevalence of diarrhoea and inappropriate health-seeking behaviour amongst parents or caregivers of children under five with diarrhoea in the Engela District in the Ohangwena Region, Namibia. The findings from Phase 1 form the basis for developing health promotion strategies and skills to enhance the parents' or caregivers' prevention and management of ailments and their health-seeking behaviours (HSB) (Phase 2). The purpose of the current chapter is to conceptualize the study's key findings on health-seeking behaviour and link them to Dickoff, James, and Wiedenbach's 1968 practice-oriented theory for strategy development.<sup>(36)</sup> The theory assisted the researcher in identifying the main related concepts and to describe their effects concerning the strategies to be developed. Hence, based on practice-oriented theory, the concepts of an agent, recipient, context, dynamics, and terminus served as the basis for developing health promotion strategies for enhancing appropriate health-seeking behaviours, prevention and diarrhoea management skills amongst parents or caregivers in Ohangwena Region.

#### **5.2 SUMMARY OF FINDINGS ON THE EPIDEMIOLOGY OF DIARRHOEA, PARENTS/CAREGIVERS' PREVENTION AND MANAGEMENT SKILLS, HEALTH-SEEKING BEHAVIOUR AND ASSOCIATED FACTORS**

Below we provide, in summary, the significant findings from this study, which necessitated the development of the health promotion strategies: the prevalence of

diarrhoea among children under five and the factors contributing to parents'/caregivers' health-seeking behaviour for diarrhoea among children under five.

### **5.2.1 The prevalence of diarrhoea among children under five and associated factors**

Diarrhoeal disease is a significant threat to human health and a leading cause of global mortality and morbidity among children<sup>(149)</sup> According to this study, diarrhoea prevalence was 23.8%, which is high compared to findings noted in the Namibian Demographic and Health Survey 2013 (NDHS). The magnitude of diarrhoeal disease among children younger than five was 17%.<sup>(23)</sup> Also, residents from informal settlements reported the highest diarrhoea prevalence of 48% in the study area. Furthermore, factors such as demography, nature, and house characteristics contributed to diarrhoea prevalence in the study area.

#### *5.2.1.1 Demography factors*

Demographic factors such as residential, child and mother or caregiver age, number of occupants per household, child immunization status, and nutritional status contributed to diarrhoea prevalence.

#### *5.2.1.2 Nature and characteristics of the household factors*

Nature and characteristics of households, such as the number of sleeping rooms per household, access to drinking water, lack of toilet facilities, nature of building materials, poor access to media, and poor hygiene were among the factors that contributed to diarrhoea prevalence.

### **5.2.2 Factors contributing to parents'/caregivers' health-seeking behaviour for diarrhoea among children of under five**

According to Franckel et al.,<sup>(94)</sup> health-seeking behaviour depends not only on the availability of health facilities or individual characteristics but also on social, cultural, and historical context-related factors. According to the current study findings, 73% of parents/caregivers were categorized as having practised inappropriate health-seeking since they practised other types of care which are not according to the definition of

appropriate health-seeking. **Aspects of appropriate health-seeking include seeking help within 24 hours from skilled healthcare providers after recognizing acute diarrhoea and using Oral Rehydration Salts (ORS) solution and zinc supplements in managing diarrhoea**). In addition, factors such as the perceived cause of diarrhoea, knowledge, attitude, and practices, sociodemographic factors, cultural factors, health services related factors, parent or caregiver/individual-related factors, physical accessibility, and characteristics of disease and symptoms contributed to health-seeking behaviour.

#### *5.2.2.1 Perceived causes of diarrhoea*

The following themes (spiritual beliefs, traditional and local beliefs, and myths) emerged from focus group discussions with the parents or caregivers of children under five who participated in this study.

- Spiritual beliefs

Some parents indicated diarrhoea prevalence to be associated with evil spirits or witchcraft; therefore, there is no need to take the child for biomedical services but rather go for prayers.

- Local beliefs

Local beliefs such as diarrhoea occurring because the child has "endjadja", (Oshiwambo word meaning intestines, used when somebody is having abdominal pains.), or the child ate bad food, or it is due to breast milk, plants flowering, playing under the sun or teething, or it is air-borne. These beliefs may prevent parents or caregivers from taking their children to health facilities or giving ORS.

- Myths

For some participants, diarrhoea can occur due to the child being possessed by their parents, themselves, or other possessions. Therefore, it is believed to be useless to take them for biomedical treatment.

#### *5.2.2.2 Knowledge, attitudes, and practices (KAP)*

Based on the evaluation criteria set in this study to assess KAP among parents/caregivers related to causes, management, and prevention of diarrhoea among children under five. The majority, 64% of the participants, were categorized as having inadequate knowledge,

72% had negative attitudes, and the minority, 8%, had good practices. Furthermore, 61% of parents indicated performing perineal cutting to prevent and manage diarrhoea.

#### *5.2.2.3 Sociodemographic factors*

Based on sociodemographic factors such as residence, mother/caregiver age, the number of occupants per household was statistically significantly associated with health-seeking behaviour.

#### *5.2.2.4 Cultural factors*

Cultural factors such as practising perineal cutting, traditional beliefs, consulting traditional healers, traditional medicine, stereotyping, victimizing, spiritual beliefs, social networking, and influences from elderly family members influence parents'/caregivers' health-seeking behaviour.

#### *5.2.2.5 Health services factors,*

Furthermore, health service-related factors such as nurses' attitudes, overcrowded health facilities, long waiting times, staff shortages, and inadequate service provision (clinics not functioning on weekends) have contributed to inappropriate health-seeking behaviour.

#### *5.2.2.6 Individual related factors*

Individual factors such as the mother or caregivers' ignorance, negligence, alcohol consumption, lack of urgency, lack of responsibility, inadequate knowledge and understanding, multiple tasks, and practices contributed to delay in health-seeking.

#### *5.2.2.7 Physical accessibility*

In addition, parents or caregivers indicated that factors such as long distances to health facilities, shortage of health facilities, and lack of transport have contributed to delays in health-seeking.

#### *5.2.2.8 Characteristics of disease and symptoms*

Diarrhoea with accompanying symptoms such as fever or blood in stools positively and statistically significantly ( $p > 0.05$ ) contributed to the health-seeking behaviour of the parents and caregivers.

### **5.3 CONCEPTUAL FRAMEWORK FOR HEALTH PROMOTION AND ENHANCING DEVELOPMENT OF APPROPRIATE HSB STRATEGIES FOR PARENTS/CAREGIVERS OF CHILDREN UNDER FIVE IN THE OHANGWENA REGION**

According to Grant and Osanloo,<sup>(150)</sup> a conceptual framework is a logical structure of connected concepts that helps the researcher provide a visual display or picture of how the ideas in the study or within the theoretical framework relate to one another. Therefore, when conceptualizing an idea, it is essential to think and outline specific dimensions and search for answers to certain questions.<sup>(150)</sup> Hence, it is crucial to ask questions like ‘What is the problem that the idea solves?’, ‘Who is the consumer for the idea?’, ‘Does the idea solve the consumer’s problems?’ ‘and ‘How will the solution be delivered to the consumer?’<sup>(115)</sup> Hence, it is imperative to direct the thinking to specific dimensions and to search for answers to certain questions that help evolve the idea from the initial thought through the several stages of innovation. Based on the current study, results on the epidemiology of diarrhoea in the Ohangwena Region, the parents' or caregivers' perceptions, knowledge, and attitudes concerning causes, prevention, and practices of management of diarrhoea, the researcher has identified the main concepts and sub-concepts such as diarrhoea prevention, management, and health-seeking behaviours. Dickoff et al.'s (1968) framework for conceptualizing an idea was adopted, which has helped the researcher understand the dimensions and questions to consider for the strategy development process. The adopted survey list from Dickoff et al.,<sup>(36)</sup> as described in Figure 32, includes the elements of agent (those that are responsible for performing the activities), recipient (the beneficiaries of the activities), context (environment in which the exercises

are performed), dynamics (challenges and findings), procedures (guiding techniques of activities) and terminus (outcomes of the implemented activities). In addition, the conceptualization technique was utilized to construct a concept map. The construct map illustrated how the key concepts are interrelated in developing the current strategies (see Figure 32).

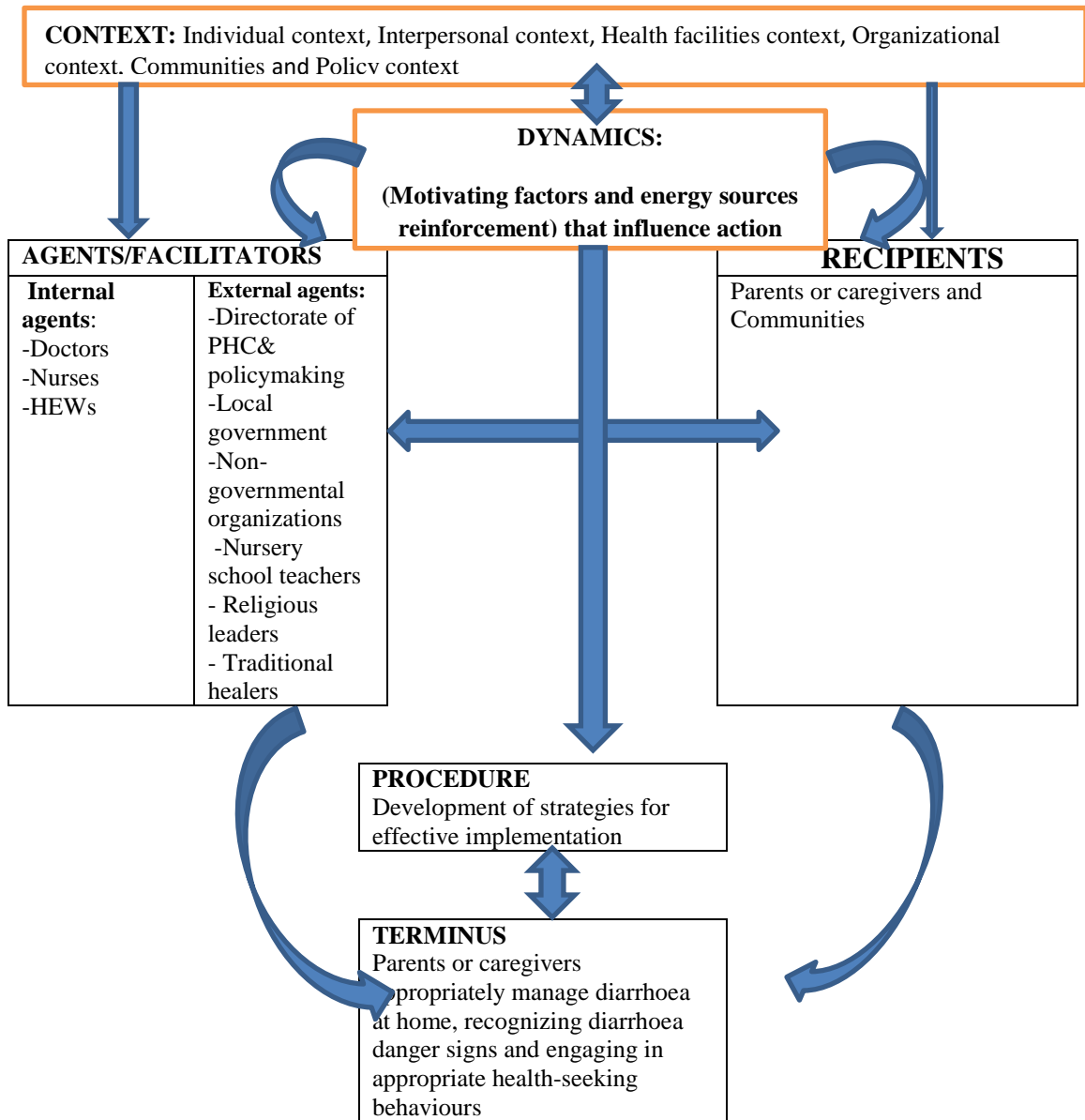


Figure 31: Conceptual framework map of HSB

### 5.3.1 The agents

Dickoff et al.<sup>(36)</sup> describe an agent as someone who performs an activity towards realizing a goal. Any person who specializes in enabling the change process whereby new values, attitudes, and behaviour are adopted can play the role of an agent.<sup>(36)</sup> Based on the above definition in this study, the researcher considered the following internal and external agents. The internal agents constituted of (the nurses, doctors, and HEWs) who are employees of the Ministry of Health and Social Services (MoHSS) working in the health facilities or constituencies where the study was conducted. Furthermore, the external agents are all other stakeholders (Directorate of PHC & policymakers, local government, non-governmental organizations, religious leaders, traditional healers, and nursery school teachers).

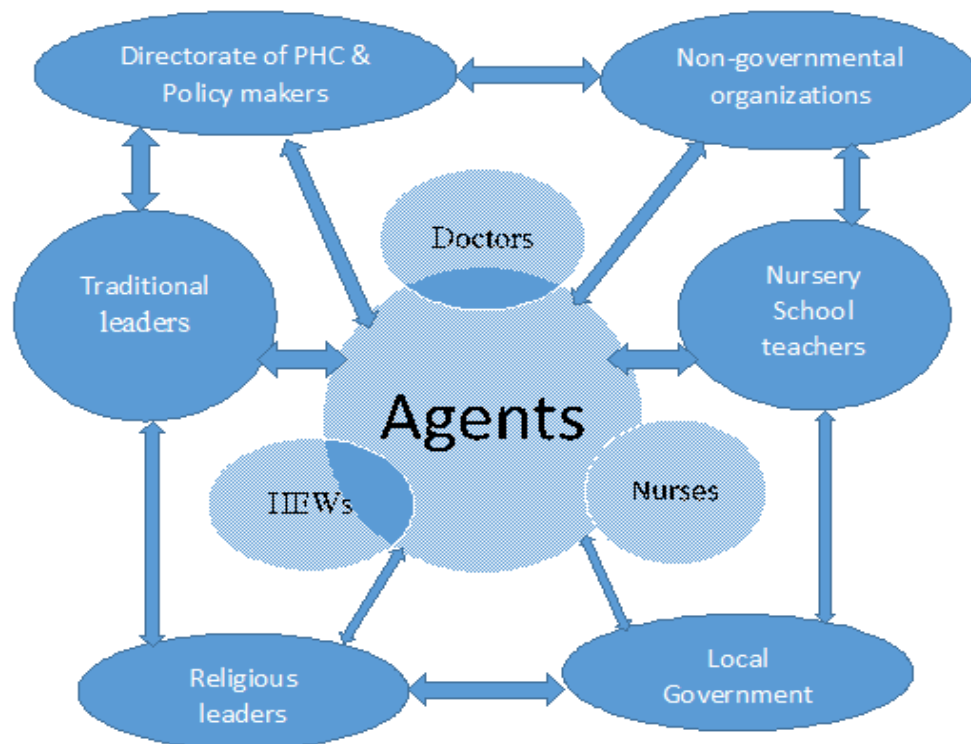


Figure 32: Agents in this study

### *5.3.1.1 Internal agent*

The internal agents comprise health workers such as nurses, doctors, and health extension workers who work directly with the parents and caregivers. Below is the profile description of the internal agents:

#### 5.3.1.1.1. Nurse

Nurses are agents who work at the health centres, clinics, and outpatient departments of hospitals. Health education and promotion are integral elements of the whole health team and health systems. Health education is an active learning process through which people increase their understanding and change or adapt their ways of thinking and acting towards better health practices.<sup>(151)</sup>

#### 5.3.1.1.2 Doctor

The agents at health facilities also include doctors who work at hospitals and the health centres in the study area. The function of doctors is to treat children under five brought to their health facilities by their parents or caregivers; besides prescribing treatment to children suffering from diarrhoeal disease, doctors also give their clients health education. In this context, most agents are from diverse multicultural and multi-ethnic groups working vis-a-vis most recipients with dominant cultural beliefs. Therefore, health education to recipients should consider the local context of ideas.

#### 5.3.1.1.3 Health extension workers (HEWs)

Health extension workers (HEWs) are the agents who live in the communities and presumably have regular contact with community members. The HEWs are already established within the Ministry of Health and Social Services structure. This workforce was developed to recognize that the necessary essential health services were not reaching people at grassroots levels, as envisaged by the Namibian Ministry of Health and Social Services (MoHSS).<sup>(152)</sup>

### *5.3.1.2 External agent*

The external agents comprise the directorate of PHC and policymakers, the local government, non-governmental organizations, religious leaders, traditional healers, and nursery school teachers. The researcher provides more detailed descriptions of the external agent profiles:

#### 5.3.1.2.1 Directorate of Primary Healthcare (PHC) and policymakers

The directorate of PHC is mandated to ensure universal health coverage to all community members at the grass root levels.<sup>(153)</sup> Furthermore, for PHC to achieve universal health coverage, health-related Sustainable Development Goals (SDGs), and health security, issues related to HSB need to be given high consideration and urgent attention.

The role of the external agent as a policymaker is to facilitate the implementation and coordination of health-seeking behaviour projects to promote health and enhance appropriate health-seeking behaviour and encourage information sharing through collaboration with the internal recipients.<sup>(36)</sup>

#### 5.3.1.2.2 Local government

Health promotion and activities aiming to change behaviours among community members demand coordination of action by a wide range of bodies, such as health professionals working in collaboration with NGOs, government, local authorities, industry, and media. This study has identified several challenges contributing to diarrhoea prevalence and influencing health-seeking behaviour. Solving the situation at hand requires building houses and resettling individuals living in informal settlements and ensuring clean, accessible water supplies, proper sanitation, and safe water.

#### 5.3.1.2.3 The Non-Governmental Organizations

Enhancing appropriate health-seeking behaviour and promoting children's under-five health requires coordinated actions by non-governmental organizations (NGOs). Subsequently, the NGOs may play different roles in programme implementation, such as day-to-day implementation, advocacy, marketing, funding, etc.

#### 5.3.1.2.4 Religious leaders

Priests are the leaders in churches where many community members gather to attend church services every Sunday or Saturday; therefore, priests as agents can use such types of gathering to convey health-related messages.

#### 5.3.1.2.5 Nursery school teachers

To minimize diarrhoea prevalence and enhance appropriate health-seeking behaviour, nursery school teachers need to be encouraged, motivated, and empowered with essential skills and knowledge on the prevention and management of some ailments, including acute diarrhoea among children under five.

#### 5.3.1.2.6 Traditional healers

According to Krah et al.,<sup>(9)</sup> integrating traditional healers into the biomedical system can improve community healthcare outcomes. In this study, traditional healers need to be empowered with knowledge related to the prevention and management of under-five diseases, including diarrhoeal disease, for them to be able to identify danger signs and proper referrals to health facilities.

### **5.3.2 The Recipients**

Recipients refer to a person who receives something; therefore, the recipients are the beneficiaries of the activities.<sup>(36)</sup> In this study, the recipients are community members, including parents or caregivers of children under five years who receive services or support from the activities provided by the agent.

### **5.3.3 The context**

According to Dickoff et al., a context is an environment where the activity was conducted<sup>(36)</sup>. An activity is produced by the agent and received by the client within any context. In this study, the health promotion activities related to acute diarrhoea amongst children under five and their parents and caregivers were based on the health-seeking behaviour socio-ecological model used in the health promotion field. The model is used to understand and identify targets for general and specific health behaviour interventions and

is widely adopted for health promotion interventions <sup>(155)</sup>. The components of the context were based on the social-ecological model. The social-ecological model illustrates the complex network that includes interplay among individuals and their families, the social networks and relationships in their lives, the organizations and institutions that provide services, and the society at large.<sup>(156)</sup> Hence, supporting individuals related to behaviour change should not provide solutions geared towards individuals with health-related behaviour problems or solutions within the context of medical healthcare but require adaptable solutions that span society. Furthermore, the components at all socio-ecological levels can contribute to overall well-being, health promotion, and behaviour change. Based on the socio-ecological model, we suggest several targets and setting to enhance appropriate HSB and promote health among children under five. This study established that several factors emerged contributing to the diarrhoea prevalence and inappropriate health-seeking. Hence, the developed interventions to remedy the situation included socio-cultural factors, cultural beliefs and practices, social support, individual perceptions, motivations, and capabilities to change, the political and physical environment. The social-ecological model comprises five levels: Individual, interpersonal, organizational, community and policy (see Figure 34). The interventions aimed to enhance appropriate HSB and promote health according to the levels are discussed below.

HSB and promote health according to the levels discussed below.

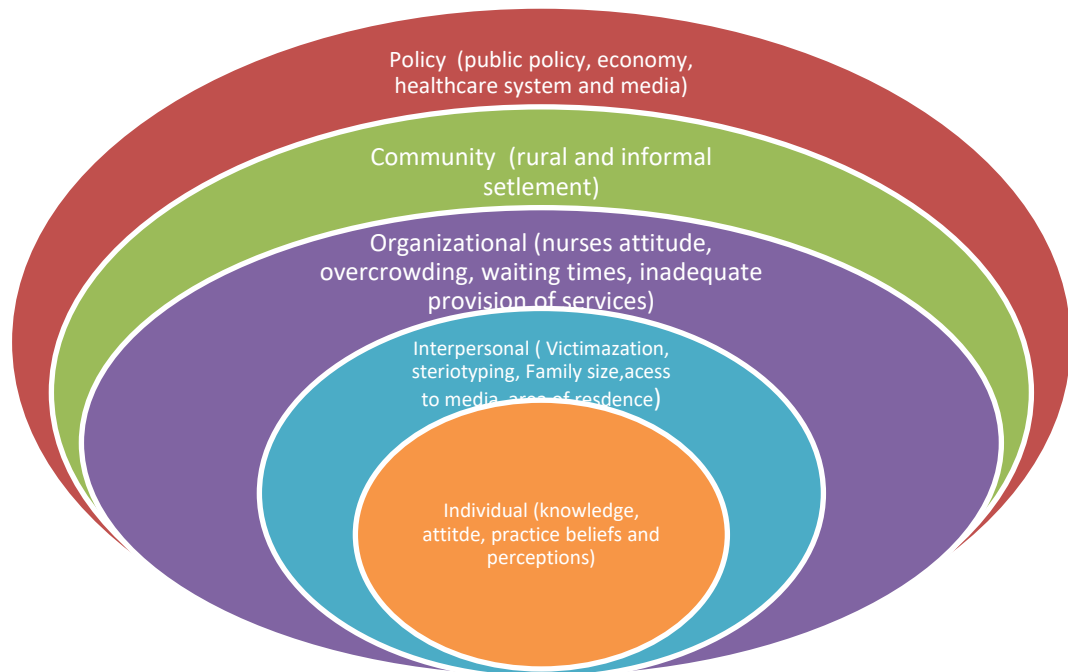


Figure 33: The social-ecological model of factors influencing HSB

#### 5.3.3.1. Individual level

The individual level is the core of the model. It forms a layer of personal attributes related to the burden of diarrhoea among children under five and HSB. In this study, individual attributes, such as parents' perceptions about causes of diarrhoeal disease, inadequate knowledge, negative attitude, poor practices, and beliefs, contributed to the prevalence and poor management of diarrhoea and inappropriate health-seeking behaviour. Studies indicated that parents play a crucial role in preventing and managing health-related ailments in children under five.<sup>(40)</sup> Therefore, it is critical to empower parents and caregivers in the Ohangwena district with knowledge related to prevention, causes, danger signs, and management of diarrhoea among children under five, as well as related harmful practices in managing diarrhoeal diseases.

Improving parents' and caregivers' literacy related to acute diarrhoea among children is a recommended strategy in this study. Educated parents are reported to be more receptive to programmes and interventions.<sup>(83)</sup> This can be done by providing health education counselling to parents and caregivers through interpersonal communication with health staff (nurses, doctors, and HEWs) and health promotion activities such as seminars, audiovisuals materials, community gatherings, church services and mass media.

Opportunities need to be created for active parents' and caregivers' participation and involvement in health-related programmes.

Engage parents and caregivers in healthcare decisions to promote a client-centred approach and ownership.

#### *5.3.3.2 Interpersonal level*

This level represents interactions between the individual and direct influences by other people.<sup>(157)</sup> Inappropriate HSB interpersonal correlations include victimization, stereotyping, family size, media access, and residence area. Developing awareness and health-support programmes associated with behaviour change should be geared towards all family members

Family planning programmes should be promoted and encouraged to reduce family sizes; according to the study conducted, a large family was associated with double the burden of malnutrition <sup>(158)</sup>. Furthermore, based on the findings of this study, diarrhoea prevalence was associated with malnutrition.

#### *5.3.3.3 Organizational context*

The organizational level in this context is the health facilities. The health facilities environment correlates to HSB burden related to nurses' attitude, overcrowding, waiting times, and inadequate provision of services. In-service education related to customer satisfaction and professionalism should be conducted monthly. Health facilities should be accessible to the communities; they should ensure the supply of ORS and other essential drugs and water purification sachets throughout the year. Additionally, the healthcare facility setting of the study is the district hospital, the health centres, and the clinics that provide primary healthcare (PHC) services. The primary healthcare approach comprises preventive, health promotion, curative and rehabilitative services.<sup>(159)</sup> It further considers the implementation of protocols, standard operating procedures (SOPs), and guidelines related to specific ailments. The current study assessed the aspects of acute diarrhoea among children under five.

#### *5.3.3.4 Community context*

At the community level, both rural and informal settlements correlate with the prevalence of diarrhoea and inappropriate health-seeking behaviour. According to the current study findings, perineal cutting is commonly practised as part of traditional diarrhoea prevention and management among residents of the Ohangwena region. Therefore, training parents, caregivers, and traditional healers to identify and refer children presenting diarrhoea danger signs is crucial. Agents need to develop community interventions to modify all human behaviour influencing HSB and diarrhoea prevalence. Community members need the training to change some of their behaviours associated with culturally coded patterns, such as cultural practices related to diarrhoea prevention and management, to reduce under-five morbidity and mortality related to diarrhoeal disease.

Furthermore, most essential health promotion activities, such as health education, are organized by the health extension workers and occur in the village/community according to the availability and the community wishes and conveniences. Also, the management of minor ailments and home management of diarrhoea are performed by health extension workers, parents, and caregivers. In addition, churches are places where many community members gather to attend church services every Sunday or Saturday; therefore, agents can use such gatherings to convey health-related messages. Also, priests can be empowered to provide health education related to diarrhoeal disease and harmful practices. In addition, based on the high prevalence of diarrhoeal of 23.8% among children under five in the district and 48% in the informal settlements, to minimize diarrhoea prevalence and enhance appropriate health-seeking behaviour, nursery school teachers need as well to be encouraged and motivated, and empowered with essential skills and knowledge on managing some ailments, including diarrhoea.

#### *5.3.3.5 Policy level*

All the levels mentioned above are bound to systems that influence individual behaviours and policies, such as government and political structure, social structure, public policy, healthcare systems, economy, and media are all part of more significant policies. Policy

and systems involved in the current study include public policy, the economy, the healthcare system, and the media.

Several policies related to health promotion were developed and effectively implemented in Namibia, such as the Namibian agriculture policy, the national health policy framework 2010-2020 and the school feeding programmes etc.<sup>(160)(109)(161)</sup> However, health promotion-related policies should be maintained and expanded to address cultural beliefs and practices that hinder proper management and prevention of diarrhoea, together with other ailments of children under five.

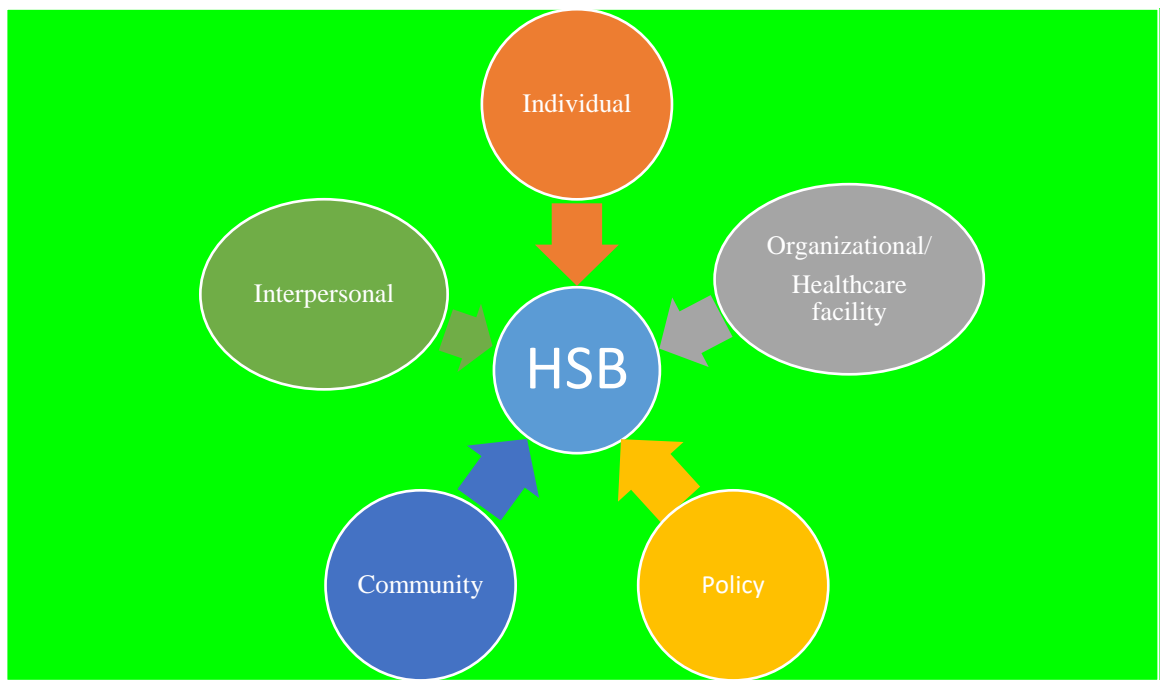


Figure 34: The context in which health education will be provided

### 5.3.4 Dynamics

According to Dickoff et al.,<sup>(36)</sup> dynamics are motivating factors or internal energy sources that enable an individual or entity to become successful. The dynamics should be in harmony with the socio-economic and cultural status of the parents or caregivers to facilitate the achievement of the desired health promotion levels and appropriate HSB.

The dynamics in this study were derived from the merging table, Table 24, at the end of Chapter 4. The dynamics include the identified challenges (see Figure 36), such as the high prevalence of diarrhoea among children under five, 23.8% in the district and 48% in informal settlements and factors associated with the prevalence and ensuing adverse effects on families, such as perceived cause of diarrhoea, parent/caregivers' poor knowledge, attitude and practices regarding prevention and management of diarrhoea among children under the age of five years. The mentioned factors necessitated and drove actions to motivate parents/caregivers to seek change (improvement to prevent and manage the diarrhoeal disease and improve the children's health). Factors such as enhanced parents/caregivers' literacy and health knowledge will keep parents and caregivers reinforced and motivated to maintain appropriate HSB for the well-being of the children. (See Table 25).

*What drives agents and recipients to work towards terminus?* According to Dickoff et al., people are motivated by service provision and a sense of achievement.<sup>(36)</sup> The health workers and community members are motivated by achieving improved diarrhoea prevalence, treatment outcomes, and improved HSB. Activities that facilitate the achievement of this goal include empowering parents/caregivers in terms of management treatment and prevention of diarrhoeal disease among children under five, developing personal/individual skills, enhancing appropriate health-seeking, strengthening community action, and empowering stakeholders and actors that are playing a role in mitigating factors associated with the cause of diarrhoea among under-five children to implement activities to achieve the goal. Motivation needs to include community members and health workers to drive and sustain action toward the goal. The motivation needs to be re-enforced by training, mentoring and technical support to equip the parents/caregivers and healthcare workers for action; and recognition and reward for good performance.<sup>(107)</sup>

#### ***5.3.4.1 Factors that will influence and reinforce positive actions towards the terminus***

Changing people's behaviour is a long process that requires the agent's consistency and determination, and therefore attention needs to be paid to what will drive the agents and recipients to act and what factors will reinforce positive actions towards the terminus. The

method of how people modify their behaviour is explained by the transtheoretical model of behaviour change (see Figure 36). According to Prochaska et al., cited in Siddharthan et al.,<sup>(162)</sup> the transtheoretical model of behaviour change comprises five stages, namely: the pre-contemplation, contemplation, preparation, action, and maintenance

#### *5.3.4.1.1 Pre-contemplation stage:*

During the first stage, the recipients (parents or caregivers) are unaware of the problem and may resist recognizing or modifying their behaviour by creating awareness to change the recipient's values and beliefs; the recipient moves to the second stage.

#### *5.3.4.1.2 Contemplation stage*

In the second stage, the agent must continue persuading and motivating the recipients. The recipients develop the willingness to make some changes in the coming future and move to the third stage. People in this stage weigh the pros and cons of making the change. In this stage, recipients decide whether they need to correct the problem and whether making a change outweighs the pros and cons of maintaining their present behaviour.

#### *5.3.4.1.3 Preparation stage:*

During the third stage, the recipient intends to act; however, the agent needs to continue carrying out health education to improve the recipients' health literacy and prepare them to move to the next stage. The recipients in this stage may not know how to make a change and could be nervous about their ability to change. Recipients move to the next step when they select a plan of action that they are confident will work and are assured that they can follow through with the plan.

#### *5.3.4.1.4 Action stage*

In the fourth stage, the recipient starts to practice the desired behaviours; therefore, the agent needs to continue facilitating the process.

#### 5.3.4.1.5 Maintenance stage

During the fifth stage, the recipient works to sustain the behaviour change; however, the agent needs to reinforce changes using reminder communication, such as messages related to desired actions to be given by preachers in churches, community gatherings or televisions and radio broadcasts, etc.



Figure 35: Transtheoretical model of behaviour change (Adapted from Siddharthan et. al.) (162)

Table 25 Dynamics of the study and proposed strategies

Objective	Main Findings per objectives	Merging of the findings	Proposed strategies from the findings
Determine and describe <b>epidemiology factors associated with diarrhoea</b> among children under five in the Ohangwena region. [Phase 1]	High prevalence of diarrhoea among children Epidemiological factors associated with the cause of diarrhoea <ul style="list-style-type: none"> <li>• Demographic</li> <li>• Nature and household</li> </ul>	Epidemiological factors associated with the cause of diarrhoea Perceived causes of diarrhoea (1, 2) Lack of knowledge in terms of cause, management, and sign and symptom (1 and 3) Negative attitude towards the cause, treatment, and prevention	<p><b>Strategy 1</b> Empower parents or caregivers in terms of the causes, management, and prevention of diarrhoea among children under the age of five</p> <p><b>Strategy 2</b> Develop personal/individual skills of the parent/caregiver</p> <p><b>Strategy 3</b> To enhance appropriate health-seeking behaviour of the parent/caregiver</p>
Explore and determine parents'/caregivers' <b>perspectives on the causes of diarrhoea</b> in the study area prevalent in Engela District in the Ohangwena region [Phase 1]	Perceived causes of diarrhoea <ul style="list-style-type: none"> <li>• Beliefs</li> <li>• Associated factors</li> <li>• Diarrhoea mortality</li> </ul>	Poor practice in terms of prevention and management	<p><b>Strategy 4</b> Empower stakeholders and actors that are playing a role in mitigating factors associated with causes of diarrhoea among children under the age of five years</p>
Determine the <b>knowledge, attitude, and practices</b> among parents or caregivers regarding acute diarrhoea in Engela District in the Ohangwena region [Phase 1]	Lack of knowledge in terms of cause, management, symptoms Negative attitude towards a cause, treatment, and prevention Poor practice in terms of prevention and management	Factors associated with health-seeking behaviour	
Determine and explore <b>factors associated with health-seeking behaviours</b> of caregivers living in Engela District in Ohangwena region [Phase 1]	Factors associated with health-seeking behaviour <ul style="list-style-type: none"> <li>▪ Sociodemographic factors</li> <li>▪ Cultural factors</li> <li>▪ Health services factors</li> <li>▪ Mother or caregiver related factors</li> <li>▪ Physical accessibility</li> <li>▪ Nature of symptoms</li> </ul>	Factors associated with health-seeking behaviour	

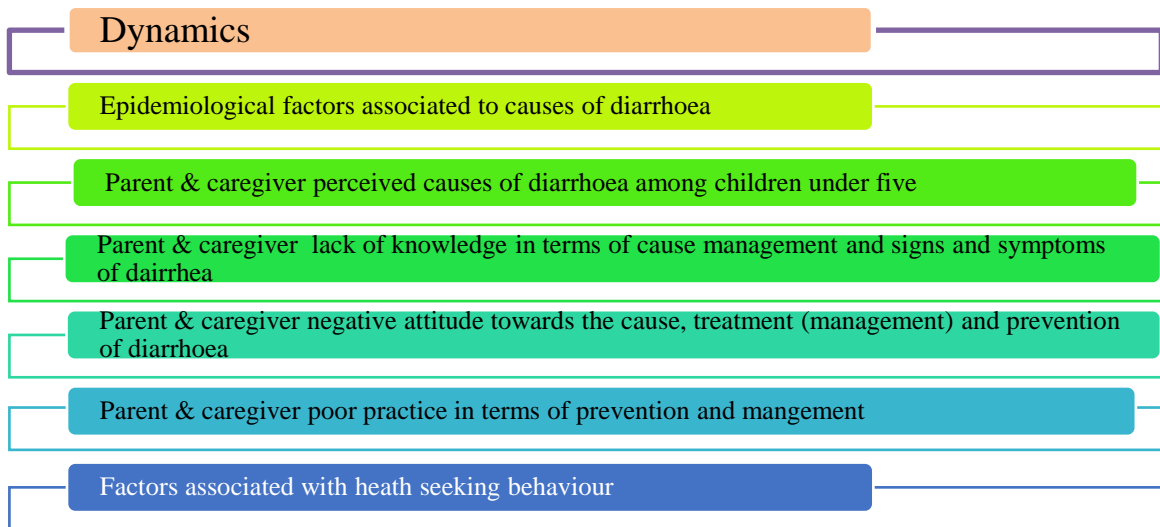


Figure 36: Dynamics of the study

#### 5.3.4.1 Epidemiological factors associated with causes of diarrhoea

The study found that the prevalence of diarrhoea in children under the age of five years in the district was 23.8%, and in the informal settlement, 48%. According to the agents' key informants, the high occurrence of diarrhoea in the current study was observed in the rainy season between January and March. In addition, this study found factors such as area of residence, child immunization status, nutrition status, access to safe drinking water, lack of knowledge, and practices to have contributed to diarrhoea prevalence.

Children in the informal settlement were over 36.42 times more likely to suffer from diarrhoeal disease than those in rural areas. The majority, 86% of the inhabitants in the informal settlement, indicated that they don't have access to tap water, but they buy from those who have tap water within their premises instead. Also, the unavailability of toilet facilities contributed to the prevalence of diarrhoeal disease, with households with toilets having 50 times less likely to report the incidence of diarrhoea in under-fives. Children whose immunization was not up-to-date were found to be statistically associated with the prevalence of diarrhoea. Equally, the nutritional status of children under five was statistically associated with the occurrence of diarrhoea. In addition, factors such as lack of information, hygiene practices, and feeding practices contributed to diarrhoea prevalence. All these effects warranted the need to strengthen health education and

advocacy for providing safe water and toilets and improve the literacy provided for in the strategy developed.

#### *5.3.4.2 Parent & caregiver perceived causes of diarrhoea and diarrhoea-related mortality*

In this study, spiritual beliefs, myths, and traditional beliefs have negatively impacted the parents' or caregivers' perceived cause of diarrhoea and diarrhoea symptoms and consequently contributed to inappropriate health-seeking behaviour and improper management of diarrhoea. Moreover, lack of parents' or caregivers' urgency, diarrhoea complications, poisoning from herbal medications, malnutrition, and parents' or parents' negligence contributed to related diarrhoeal mortality amongst children under five.

Therefore, it is necessary to improve parents' and caregivers' views and perceptions through health education campaigns aiming to tackle health-related cultural issues catered for in the HSB-developed strategies.

#### *5.3.4.3 Parent & caregiver lack of knowledge in terms of cause management and signs and symptoms of diarrhoea*

This study found that 64% of parents or caregivers had inadequate knowledge of diarrhoeal diseases. Factors such as area of residence and access to media were significantly associated with inadequate knowledge. The study indicated parents or caregivers from informal residential areas were 16 times more likely to have insufficient knowledge than those from other residential areas. Furthermore, lack of access to information was significantly associated with diarrhoea prevalence. Consequently, much needs to be done to sensitize and enhance knowledge to improve parents'/caregivers' knowledge of managing and to prevent diarrhoea. Considering this study's observations, school-based health and hygiene education programmes should include strategies to involve family members, particularly parents and siblings.

#### *5.4.4.4 Mother & caregiver negative attitudes toward the management and prevention of the causes of diarrhoea*

According to the findings of this study, most of the participants, 72.3%, were categorized as having negative attitudes towards causes, treatment, and diarrhoea prevention. Area of residence, access to information, the parent or caregiver age group, and the parent or caregiver level of education was associated with the negative attitude.

In conceptualizing attitude and behaviour change, parents and caregivers act upon their beliefs. The beliefs are determined and influenced by families, friends, colleagues, and various norms surrounding the individual and things collectively perceived and accepted to be normal.<sup>(163)</sup>

Evidence suggests that when norms are at play, shifting knowledge or individual attitudes is often not enough to change behaviour because norms are generally enforced through other people's expectations. People conform to their attitudes or behaviours to gain social approval and belonging, and if individuals divert from a standard, they often lose social support and maybe ostracized or sanctioned. As a result, interventions looking to change behaviours ought to create new beliefs within an individual's social group so that collective expectations allow for new behaviours to emerge and be sustained.<sup>(164)</sup> Therefore, social change strategies must critically assess which norms must be addressed in a given context and determine which factors are most pertinent in holding them in place. Figure 38 shows the conceptual framework of attitude and behaviour change.

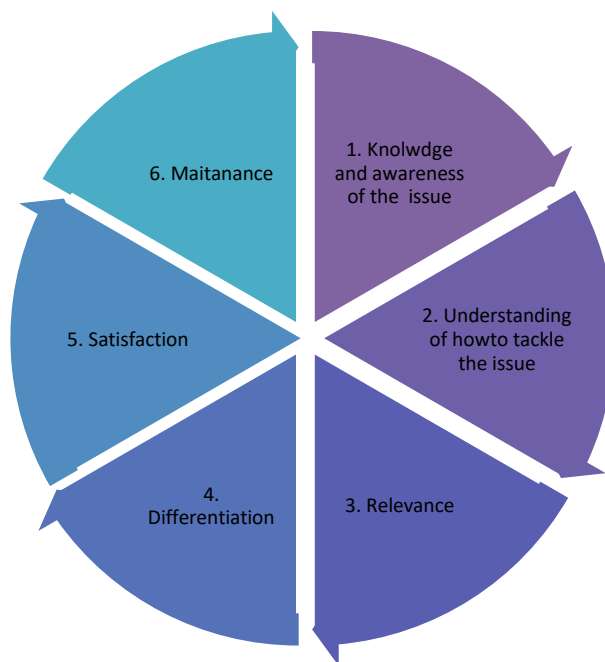


Figure 37: Conceptual framework of attitude and behaviour change

#### 5.3.4.5 Parents' and caregivers' poor practice in terms of prevention and management

This study found 52% of parents or caregivers to have reasonably moderate practice, 40% were categorized as having poor practice, and a minority of 8% had good practice. This study further found that 57.9% of parents or caregivers indicated washing hands only when there is enough water. Furthermore, the practice is significantly associated with the parents' or caregivers' age group, residential area, level of education, access to media, and diarrhoea prevalence. Additionally, 61% of parents indicated practising perineal cutting to prevent and treat diarrhoea amongst their children under five with diarrhoeal disease. In the current study, health workers indicated encountering deaths related to herbal medication poisoning and diarrhoeal complications. Inappropriate management of diarrhoea episodes can result in a higher risk of mortality due to increased levels of dehydration or long-lasting consequences as a result of prolonged illness or nutritional restrictions.<sup>(40)</sup> Moreover, the study found that traditional beliefs, widespread knowledge, authority figures' instructions, including elderly community members, health workers, and the HEWs, often inform these practices. Hence, these practices must consequently be addressed as a matter of urgency in maternal and newborn programmes, targeting parents or caregivers and the broader social network. Health education should be promoted and motivated at each health organization, furthermore, health education should be provided

in the community, clinics, primary healthcare centres (PHC centres), antenatal clinics (ANC), maternity wards, outpatients department (OPD), and pediatric wards should include aspects related to diarrhoea prevention, and management as well children under-five nutrition.

### 5.3.4.6 Factors associated with health-seeking behaviour

In this study, 73% of the parents or caregivers were categorised as having inappropriate health-seeking behaviour based on the criteria set in this study. Several factors associated with health-seeking behaviour were identified, see Figure 39.

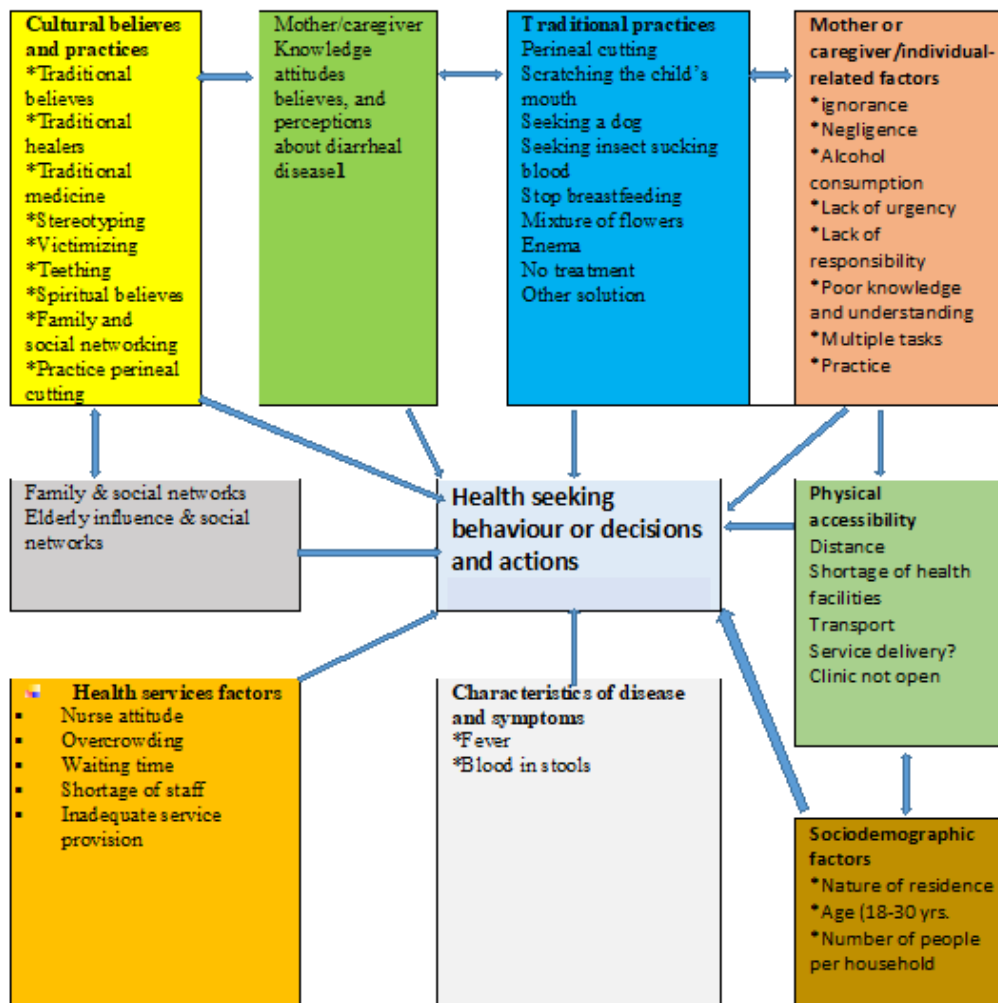


Figure 38: Determinants of health-seeking behaviour

### 5.3.5 Procedures

The procedure is described by Dickoff et al. as the rules or processes to be followed or used to guide how activities should be carried out to achieve the results (terminus).<sup>(1)</sup> They further indicated that the procedures or protocol for reaching the goal does not require an order to be followed; however, it should allow more latitude for an activity to be achieved. In the current study, procedures guided the development of strategies for health-seeking behaviour (HSB). The procedures followed in developing the strategies involved consolidating findings from Phases 1 & 2. In addition, the current study used Howe's Compass Aligned Performance System (c@ps), which was developed in 2011 during the development of the strategies. According to Howe, the Compass Aligned Performance System (c@ps) simplifies the strategy and produces a process for easy implementation.

Moreover, he emphasizes that a strategic plan needs to be simple; it should be summarised into a one-page document using the compass after the strategies are developed. For this study, consultations with experts in the field were conducted to validate the developed strategies (see Figure 40). The procedures used to develop health promotion strategies to enhance appropriate HSB are discussed in Chapter 6 of the current study. According to Dickoff et al. (1968), the procedure entails describing the environment and the path to implement activities to realise the goal.

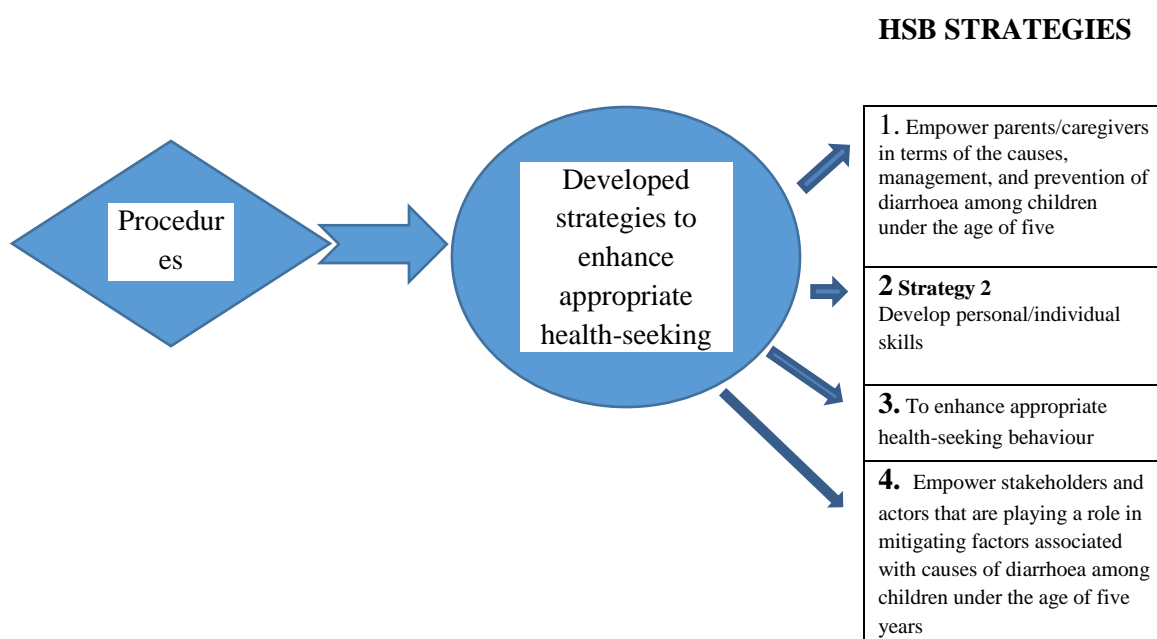


Figure 39: The procedures for strategies for HSB<sup>(35)</sup>

### 5.3.5.1 Factors related to successful strategic implementation

For strategic implementation to succeed, stakeholders need to be committed, determined and efficient in converting purpose into results. Strategies rely on the resources available to implement strategies. The leaders need to provide their teams with specific rules and guidelines; every participant should know what is expected from them considering the new strategy, continuous feedback needs to be given, and communication is essential to ensure that strategies can be evaluated and improved.

Implementation can be significantly aided by setting up a reward system which can be implemented in the form of recognition, and the positive impact of the new strategy should be continuously communicated to all involved stakeholders. Periodical review at regular intervals is essential to change the policies that no longer serve a distinct purpose. The implementation of these strategies necessitates inputs from various role players and stakeholders. (See table 26)

*Table 26: Proposed actions for stakeholders*

<b>Stakeholders</b>	<b>Proposed actions</b>
Directorate of PHC & Policymakers	<ul style="list-style-type: none"> <li>• Mobilization of resources</li> <li>• Advocate for a bigger vote to facilitate the implantation process</li> <li>• Facilitate the implementation of HP and HSB projects</li> <li>• Collaborate with the internal recipients</li> <li>• Encourage information sharing</li> <li>• Intersectoral collaboration</li> </ul>
Local government	<ul style="list-style-type: none"> <li>• Programme implementation</li> <li>• Social mobilization</li> <li>• Resource mobilization (build houses, provision clean water, and proper sanitation)</li> <li>• Information dissemination through media</li> </ul>
Non-governmental organizations	<ul style="list-style-type: none"> <li>• Advocacy</li> <li>• Programme implementation</li> <li>• Marketing</li> <li>• Mobilization of resources</li> </ul>
Nurses and HEWs	<ul style="list-style-type: none"> <li>• Programme implementation</li> <li>• Community mobilization</li> <li>• Health education</li> <li>• Community outreach</li> <li>• Social mobilization</li> <li>• Community empowerment</li> <li>• Community involvement/engagement</li> <li>• Intersectoral collaboration</li> </ul>
Doctors	<ul style="list-style-type: none"> <li>• Health promotion</li> <li>• Health education</li> </ul>
Religious leaders	<ul style="list-style-type: none"> <li>• Information dissemination</li> <li>• Advocacy</li> </ul>
Traditional healers	<ul style="list-style-type: none"> <li>• Involvement in health promotion activities</li> </ul>

	<ul style="list-style-type: none"> <li>• Referral of under-five conditions to health facilities</li> </ul>
Nursery school teachers	<ul style="list-style-type: none"> <li>• Health promotion</li> <li>• Referral of under-five conditions to health facilities</li> <li>• Proper management of diarrhoea among children under five</li> </ul>

### 5.3.6 Terminus

According to Dickoff et al.<sup>(36)</sup>, the terminus is the last stage or the preferred result of an activity of the project that was carried out. After implementing strategies, the outcome result is the ability of parents or caregivers to engage in appropriate health-seeking behaviour. (See Figure 41)

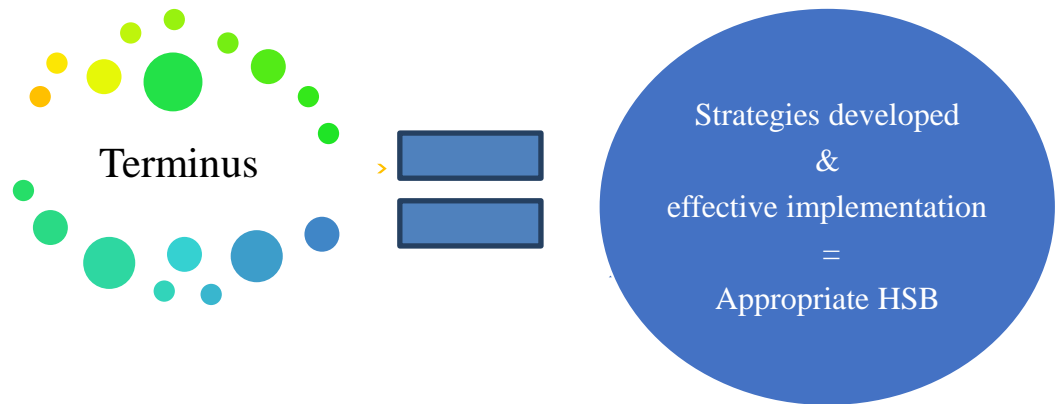


Figure 40: Terminus of the study

## 5.4 SUMMARY

This chapter described the conceptual framework for the strategies to promote health and facilitate appropriate HSB among parents/caregivers in the Ohangwena region. The conceptual framework adopted the six elements of the practice theory of Dickoff et al., (1968): agent, recipients, contexts, procedures, dynamics, and the terminus. These elements were used to guide the discussion of the constructs relevant to developing guidelines for implementing the strategies to lead to appropriate HSB addressing the diarrhoeal problem in the Ohangwena Region in Namibia.

The next chapter will discuss the development of strategies to facilitate appropriate HSB and approaches to strategy implementation for effective public health response in the Ohangwena region in Namibia, based on the key findings of the collected data (see Table 25).

## **CHAPTER 6**

### **STRATEGY DEVELOPMENT FOR IMPLEMENTATION TO ENHANCE PARENTS/CAREGIVERS' HSB AND PREVENTION AND MANAGEMENT SKILLS ABOUT DIARRHOEA AMONG CHILDREN UNDER FIVE IN OHANGWENA REGION**

#### **6.1 INTRODUCTION**

Strategy development starts with an in-depth analysis of a problem and identifies the individual and environmental contributing factors for building the envisioned characteristics for the preferred future.<sup>(58)</sup>

This chapter describes the third phase of the study, which aims to develop a 10-year plan for HSB strategies to enhance appropriate health-seeking behaviour and improve the prevention and management skills of diarrhoea among parents and caregivers in the Ohangwena Region in Namibia. Using the Delphi process, the strategies were constructed upon the conceptual framework described in Chapter 5. The chapter further elaborates on developing the strategies necessary to enhance appropriate health-seeking and health promotion in the Namibian context, particularly in the Ohangwena Region.

#### **6.2 THE THEORETICAL BASIS OF THE DEVELOPMENT OF THE STRATEGIES TO ENHANCE PARENTS'/CAREGIVERS' HEALTH-SEEKING BEHAVIOUR IN DIARRHOEA CHILDREN UNDER FIVE**

The development of the strategies was guided by Howe's<sup>(37)</sup> c@ps model, also called a Compass Aligned Performance System model. The c@ps process was developed by Clive Howe in 1999 when he realized that there was a need to simplify the strategy development process for easy implementation. He found that numerous strategies were very comprehensive and complex and often had a gap between the strategy and its operational implementation. Therefore, the c@ps process addressed this gap, and people found that they could more easily relate to a one-page process. The Compass Aligned Performance

System model is a tool that contains different objectives aiming at simplifying the strategies and planning for the implementation of the designed strategies to be achieved. As the word c@ps suggests, everything should align and be filtered through the compass. The c@ps model gives room for an extensive record of achieved objectives, those not achieved and those not required. Additionally, the c@ps model is built on four pillars: simplicity, ownership, flexibility, and accountability. Furthermore, the compass consists of the vision, values, critical success factors, key performance indicators, and strategic objectives.<sup>(37)</sup>

### **6.3 THE STRATEGY DEVELOPMENT PROCESS (METHODOLOGY)**

The developed strategies aim to enhance parents' and caregivers' health-seeking behaviours and to promote children's health by improving parents' and caregivers' health literacy and diarrhoea prevention and management skills. The development of these strategies focused on addressing the factors contributing to a high prevalence of the diarrhoeal disease among children under the age of five and factors contributing to inappropriate health-seeking behaviour in the Ohangwena Region. Furthermore, **enhancing appropriate health-seeking behaviour will ensure that, for children who are suffering from diarrhoea, help from a skilled healthcare provider will be sought promptly within 24 hours after recognizing acute diarrhoea, as well as promoting the use of Oral Rehydration Salts (ORS) solution and zinc supplements in the management of diarrhoea.**

In this context, the strategies for health promotion targeting children under five in the Ohangwena region were developed using the consensus method of the Delphi process.<sup>(165)</sup> According to Jones and Hunter<sup>(20)</sup>, the consensus method is used to decide how experts agree with the issue under consideration. Various researchers and organizations have used the Delphi consensus method to develop guidelines and strategies.<sup>(165,166)</sup>

#### **6.3.1 The Delphi method**

In this study, the Delphi process was used by initially conducting a combination of online and face-to-face focus group discussions with a group of experts in PHC and public health. The inclusion criteria was based on the availability of the penalist, experience in academia,

public health and strategic planning and those who have worked with organizations such as WHO UNICEF etc. Furthermore, nurses and doctors who worked in the PHC and pediatric department for one year and more were also considered. The participants were purposefully selected since Delphi method does not aim to get representative samples of experts but rather relevant information and experience.<sup>(165)</sup> The expert participants/key informants were given an explanation about the purpose of the discussions, and those who agreed were accepted as panel members. Three focus group discussions were conducted with key informants comprising only 8 participants per group because of COVID-related restrictions and workload. Out of the 24-panel members, 16 were experts in PHC and 8 were public health professionals. The panellist comprised experts from Namibia, one professor from Zambia and one from South Africa. Experts in the current study indicate the number of years of experience in PHC, academia, public health and strategic planning and those that worked with PHC programs for more than a year. The results obtained from the situational analyses in Phases 1 and 2 were presented to the groups, together with the five proposed health promotion strategies obtained by the researcher from the literature review. Initially, the statements about health promotion strategies to enhance parents' and caregivers' health-seeking behaviours and improve their prevention and management skills of diarrhoea were derived from a search of the lay and scientific literature.<sup>(167-169)</sup> Both published and unpublished studies and public health books were considered. The researcher used the following databases; Science direct, PubMed, and Google Scholar search. The participants deliberated and agreed to consider the strategies presented by the researcher and proposed more strategies they considered equally relevant based on the study's outcomes. Based on the local context, any additional health promotion strategies suggested by panel members were collectively examined and added to the list of the proposed strategies, provided most panel members agreed on them.

All the agreed strategies from the three FGD were listed, and the compiled list of all the proposed strategies was handed to each of the participants, and they were asked to rate the importance of each strategy statement item using the following rating scale: Vital, Important but not vital, Unimportant, Should not be included, do not know. On completion, during the third round, the participants were provided with the results and agreed on the criteria to be used. Hence, the proposed objectives, critical success factors

and key performance indicators were agreed upon. Furthermore, the vision, mission and values were proposed and adopted after setting the strategies. The researcher analyzed the final information provided and calculated percentages (see table 26). The results were presented to the working group comprising the study supervisors. The researcher screened all the items provided to ensure they fit the definition of actions aiming to promote health, enhance appropriate health-seeking behaviour of parents and caregivers, and improve their prevention and management skills of diarrhoea.

***Criteria for accepting a strategy statement***

If an item is rated by  $\geq 80\%$  of all panellists as vital to promote health, enhance appropriate health-seeking behaviour, and improve prevention and management skills of diarrhoea, it was included in the strategies.

***Criteria for rejecting a strategy statement***

All the items that did not meet the criteria mentioned above were excluded

**6.3.2 Proposed strategies**

During an international health promotion conference in Ottawa in 1986, five action areas for health promotion were prioritized. These essential areas/strategies for success are as follows.<sup>(167)</sup> 1. Build healthy public policy; 2. Create a supportive environment; 3. Strengthen community actions; 4. Develop personal skills, and 5—Reorientate health services. However, in this study, the panel members (key informants) who participated in the three focus group discussions proposed and endorsed the proposed strategies applicable to the study outcomes and the context where the study took place. After rating the proposed strategies as described above, four strategies were adopted for the current study: 1. Empower parents or caregivers in terms of the causes, management, treatment, and prevention of diarrhoea among children under five, 2. Develop parents' and caregivers' personal/individual skills 3. Enhance appropriate health-seeking behaviour, 4. Empower stakeholders and actors playing a role in mitigating factors associated with causes of diarrhoea among children under the age of five years (see Table 26).

Table 26: Proposed strategies for HP and HSB

Proposed Strategies	Vital	Important but not vital	Unimportant	Should not be included	Not know	%
1. Build HSB policy	12	0	0	12	0	50%
2. Create a supportive environment	10	0	12	0	0	42%
3. Strengthen community action	19	5	0	0	0	79%
4. Develop personal skills	20	4	0	0	0	<b>83%</b>
5. Reorient health services	5	5	10	4	0	21%
6. Mass media/Raising awareness	12	12	0	0	0	50%
7. Empower parents or caregivers in terms of the causes, management, treatment, and prevention of diarrhoea among children under the age of five years	22	0	0	0	2	<b>92%</b>
8. Advocacy and community mobilization	19	3	0	0	2	79%
9. Health promotion and education	18	6	0	0	0	75%
10. Enhance appropriate health-seeking behaviour	24	0	0	0	0	<b>100%</b>
11. Empower stakeholders and actors that are playing a role in mitigating factors associated with causes of diarrhoea among children under the age of five years	23	0	0	0	1	<b>96%</b>

## 6.4 STRUCTURE OF THE STRATEGY

According to Detels et al.,<sup>(170)</sup> a planned strategy as a problem-solving mechanism emphasizes direction and control mechanisms; hence, it is suitable for a predictable external environment. Also, the emergent strategy focuses on the learning process by taking corrective action and adopting and reviewing the original decision based on changing situations. Thus, existing strategies need constant evaluation to accommodate

emerging situations. According to the Community Tool Box,<sup>(171)</sup> the sensibleness for formulating, developing, and implementing strategies is a way to focus on structural efforts and determine how issues of concern can be addressed, to achieve the desired goals. Furthermore, the strategies use resources and emerging opportunities to effectively respond to obstacles and resistance through the effective use of time, energy, and resources. The development of the strategies was based on the articulated rationale outlined above. Howe<sup>(37)</sup> established that the developed strategies should be comprehensive but not complex to make the implementation process easier. The path to appropriate health-seeking can be accomplished through 4 strategic objectives, which have been grouped through 11 proposed focus areas. Furthermore, the purpose, vision, mission, values, goals, key performance indicators, and critical success factors are discussed below.

#### **6.4.1 Purpose**

The purpose of the development of these strategies is to promote the health of children under five and enhance parents/caregivers' appropriate HSB in the Ohangwena region

#### **6.4.2 Vision**

A vision is a mental image that provides a broad goal of what needs to be achieved in the long term.<sup>(172)</sup> In the current study, the developed strategies will contribute to reaching the overall MoHSS vision. The vision of the appropriate HSB complemented by its strategies is to improve the health status and well-being of the children under five in the Ohangwena Region, with an enabling environment for timely quality healthcare that is efficient, acceptable, and accessible for all. The key informants proposed and adopted the vision during the third stage of the Delphi process.

#### **6.4.3 Mission**

A mission statement is a short paragraph intended to answer why the organization exists<sup>(173)</sup>. The current strategies aim to improve parents'/caregivers' health literacy and promote good health for children under five in the Ohangwena region. The key informants proposed the mission and adopted it during the Delphi process's third stage.

#### 6.4.4 Values

According to Tomey the word ‘values’ means the worth, usefulness, or importance of something <sup>(172)</sup>. Furthermore, Howe <sup>(37)</sup> notes that values are linked to culture and need to be reflected by how people behave within and outside society. In this context, the researcher adopted the proposed values/principles by WHO to be applied by communicators developing specific regional disease-focused or event-based strategies and slightly modified to suit the current situation, namely: actionable, credible, relevant, timely, understandable, and accessible<sup>(174)</sup> The proposed values were presented to the key informants during the third round and were agreed upon.



Figure 41: Six principles/values to ensure communications are adopted from WHO<sup>(174)</sup>

#### 6.4.5 Goals

The goals were formulated based on the intended outcome for each four action areas for health promotion that the participants in focus group discussions prioritized, and they are as follows:

1. To promote health in children under five and ensure a reduction of acute diarrhoea

2. To build capacity and improve parents' or caregivers' knowledge, perceptions, attitudes, and practices related to prevention, causes, symptoms, and diarrhoeal disease management.
3. To help ensure that children's ailments, including diarrhoea, are sought in time
4. To facilitate the implementation of strategies
5. To improve customer satisfaction

*Table 27: Strategic focus areas for HP and HSB, goals and objectives*

<b>Strategic focus area</b>	<b>Goal</b>	<b>Objectives</b>
1. Empower parents/caregivers on causes, management, treatment, and prevention of diarrhoea among children under the age of five years	1. Promote the health of children under five and ensure the reduction of acute diarrhoea.	1. Reduction of the prevalence of acute diarrhoea among children under five years old from 23.8% to 10% by the end of 2031.
2. Develop parents/caregivers' personal/individual skills	2. Build capacity and improve parents' or caregivers', perceptions, knowledge, attitudes and practices related to prevention, causes, symptoms, and diarrhoeal disease management.	2. Improve parents'/caregivers' negative perceptions of causes of acute diarrhoea among children under five from 73% to 10% by the end of 2031. 3. Improve parents' or caregivers' negative attitudes related to prevention, causes, symptoms, and management of the diarrhoeal disease from 72% to 10% by the end of 2031. 4. Improve parents' and caregivers' poor knowledge of prevention, causes, symptoms, and management of diarrhoeal diseases from 64% to 10% by the end of 2031.
3. Enhance appropriate health-seeking behaviour,	3. Help for children's ailments, including diarrhoea, is sought on time	5. To enhance parents'/caregivers' appropriate health-seeking behaviour/practice from 27% to 80% by the end of 2031
4. Empower stakeholders and actors that are playing a role in mitigating factors associated with causes of diarrhoea among children under the age of five years	4. Facilitate strategy implementation	6. Strategies fully implemented by 2023
	5 To improve customer satisfaction	7. Achieve 90% customer satisfaction

#### **6.4.6 The strategic objectives**

Strategy development is the steps to achieve a final goal, and strategy is mainly the way to achieve a final goal. Hence, each objective is a milestone that helps one to reach his destination.<sup>(172)</sup> Furthermore, strategic objectives are statements that designate what is essential or critical and help achieve the goals.

For this study, we identified the following objectives that are aligned with the MoHSS vision, values, and functions:

- Reduction in prevalence of acute diarrhoea among children under the age of five years old from 23.8% to 10% by the end of 2031.
- Improve parents'/caregivers' negative perceptions of causes of acute diarrhoea among children under five from 73% to 10% by the end of 2031.
- Improve parents' or caregivers' negative attitudes related to prevention, causes, symptoms, and management of the diarrhoeal disease from 72% to 10% by the end of 2031.
- Improve knowledge of parents and caregivers about prevention, causes, symptoms, and management of diarrhoeal diseases from 64% to 10% by the end of 2031.
- To enhance parents'/caregivers' appropriate health-seeking behaviour/practice from 27% to 80% by the end of 2031
- Strategies fully implemented by 2023
- To achieve 100% customer satisfaction

#### **6.4.7 Key performance indicators**

The key performance indicators are related to the strategic objectives and measure the critical success factors. Therefore, they are used to monitor implementation and measure the achievement of each strategic goal. They are related to the strategic objectives and measure the critical success factors or the proposed actions to achieve the strategic objectives.

#### **6.4.8 Critical success factors or proposed actions**

The critical success factors are the actions to be carried out to achieve the strategic objectives derived from the study findings. In the current study, critical success will be a decrease in diarrhoea prevalence among children under five and improved health-seeking behaviour in the Ohangwena Region, by providing them with enabling environment to provide timely quality healthcare that is efficient, acceptable, and accessible.

### **6.5 CONTENT OF THE STRATEGY**

In the current study, a situational analysis was conducted in Phases 1 and 2 to clearly depict factors contributing to the problem that needed to be addressed and facilitate the development of the strategies.

The strategic objectives related to promoting health amongst children under five and enhancing appropriate health-seeking behaviour in the Ohangwena region in Namibia were derived from the challenges identified in the current study results. They were developed using the Howes' model. Furthermore, the strategies were endorsed by expert participants/key informants who participated in the focus group discussions. Four strategies were developed established, and activities for improvement as illustrated in table 28, namely: Empower parents or caregivers in terms of the causes, management, and prevention of diarrhoea among children under the age of five years, Develop personal/individual skills, Enhance appropriate health-seeking behaviour and Strengthen community action and empower stakeholders and actors playing a role in mitigating factors associated with causes of diarrhoea among children under the age of five years.

Table 28: Proposed strategies for HP & HSB and communication interventions

Strategies	Community-based approaches	Interpersonal/group approaches	Strategic communication approaches
<p><b>Strategy 1:</b> Empower parents or caregivers in terms of the causes, management, treatment, and prevention of diarrhoea among children under the age of five years</p> <p><b>Strategy 2:</b> Develop personal/individual skills</p> <p><b>Strategy 3:</b> Enhance appropriate health-seeking behaviour</p> <p><b>Strategy 4:</b> To empower stakeholders and actors that are playing a role in mitigating factors associated with causes of diarrhoea among children under the age of five years.</p>	<ul style="list-style-type: none"> <li>• Social mobilization</li> <li>• Community empowerment</li> <li>• Community involvement</li> <li>• Community outreach</li> <li>• Community interventions</li> <li>• Intersectional collaboration</li> </ul>	<ul style="list-style-type: none"> <li>• Faith-based mobilization</li> <li>• Mobile clinics</li> <li>• Social networks</li> <li>• Counselling/peer counselling or education</li> <li>• Support groups</li> <li>• Home visits</li> <li>• Community health workers/Lay health workers/frontline workers/Health or Social Welfare agents</li> </ul>	<ul style="list-style-type: none"> <li>• Mass media</li> <li>• Advocacy: (policy, media, agenda-setting)</li> <li>• Community media</li> <li>• Social marketing</li> <li>• Positive deviance</li> <li>• National events (e.g., immunization days, festivals)</li> <li>• Health education (e.g., antenatal-postnatal clinic, pediatric department etc.)</li> <li>• Information &amp; communication technologies/ social media</li> <li>• Seminars</li> <li>• Workshops</li> <li>• Interactive sessions</li> <li>• Group discussions</li> <li>• Meetings</li> </ul>

### **6.5.1 Strategy 1: Empower parents or caregivers in terms of the management, treatment, and prevention of diarrhoea among children under the age of five years**

The above-mentioned strategy was developed to minimize the prevalence of diarrhoea in the study area by empowering parents or caregivers with knowledge related to prevention, causes, signs and symptoms, and management of diarrhoea amongst children under five. The Strategy Goal, objectives, critical success factors, and key performance indicators are listed below.

#### ***6.5.1.1 Goal 1: Promote the health of children under the age of five years and ensure the reduction of acute diarrhoea***

To promote and ensure the reduction of acute diarrhoea among children under five, we devised three strategic objectives: critical success and key performance indicators.

##### **Strategic objectives:**

- To ensure reduction of acute diarrhoea prevalence among children under the age of five from 23.8% to 10% by the end of 2031.
  - i. Critical success factors:
    - Improved water hygiene and sanitation
    - Improved environmental hygiene.
    - Increased deworming of children under five and administration of vitamin A
    - Increase the number of home visits made by HEW
    - Increased Rotavirus immunization
    - Open defecation-free project initiated and implemented
    - Improve nutrition status of children under five
  - ii. Key performance indicators
    - Diarrhoea prevalence decreased by > 10% by the end of 2031
    - >90% of children under five received deworming and vitamin A by the end of 2031
    - The number of home visits increased by > 10% by the end of 2031.
    - >90% Rotavirus immunization coverage by the end of 2031

- >80% House with access to improved toilet facilities by the end of 2031
- 90% of the community members involved by 2031
- Malnutrition decreased by > 10% by the end of 2031

### **6.5.2 Strategy 2: Develop parents/caregivers' personal/individual skills**

This strategy aims to support personal and social development through information, health and building skills education, goals, critical success factors, and key performance indicators indicated below.

#### *6.5.2.1 Goal 2: Build capacity and improve parents' or caregivers' perceptions, knowledge, attitudes and practices (PKAP) related to prevention, causes, symptoms, and diarrhoeal disease management*

#### **Strategic objectives:**

To build capacity and improve parents/caregivers' perceptions, knowledge, attitudes and practices, we came up with four objectives, namely:

- To improve parents'/caregivers' negative perceptions of causes of acute diarrhoea among children under five from 73% to 10% by the end of 2031.
- To improve parents' and caregivers' poor knowledge of prevention, causes, symptoms, and management of diarrhoeal diseases from 64% to 10% by the end of 2031.
- To improve parents' or caregivers' negative attitudes related to prevention, causes, symptoms, and management of the diarrhoeal disease from 72% to 10% by the end of 2031.
- To improve parents' harmful practices (perineal cutting) from 61% to 5% by the end of 2031

#### i. Critical success factors:

- Conducted health education related to causes, prevention, and management of acute diarrhoeal diseases among children under five

- Promote community involvement
  - Promote community empowerment
  - Promote intersectoral collaboration to improve parents/caregivers' literacy
- ii. Key performance indicators:
- Parents and caregivers' negative perceptions enhanced by 63% by 2031
  - Parents or caregiver knowledge improved to 90% by 2031%.
  - Parents' or caregivers' positive attitude towards diarrhoea amongst children under five enhanced to 90% by 2031%.
  - Proper home management of diarrhoea increased by >90% by 2031%.
  - Decrease perineal cutting and other traditional practices related to the management of childhood diarrhoeal disease by 80% in 2031
  - 90% of the community members involved in under five health-related activities by 2031
  - Home management of diarrhoea with ORS 100% adhered to by 2031
  - Home visits 100% adhered to by 2031

### **6.5.3 Strategy 3: Enhance appropriate health-seeking behaviour**

To enhance appropriate health-seeking behaviour, the researcher came up with the following objective, critical success factors, and key performance indicators

#### *6.5.3.1 Goal 3: Help for children's ailments, including diarrhoea, is sought on time*

- **Strategic objectives:** To increase parents and caregivers' appropriate health-seeking behaviour/practice from 27% to 80%
- i. Critical success factors:
- Improved utilization of health facilities for the management of diarrhoeal disease among children under the age of five years
  - Improved health workers' attitude
  - Improved involvement of faith-based groups and traditional healers in health promotion

- Improved community involvement
- Improved intersectoral collaboration
- Improved parent/caregiver literacy
- Improved parents/caregivers' perceptions and KAP
- Increased home visits
- Health promotion policies included cultural beliefs and practices inherent in the district.

ii. Key performance indicators:

- Health-seeking for children with diarrhoea was sought on time by >90% of the parents and caregivers by 2031.
- Under-five mortality related to diarrhoeal disease complications will decrease by  $\geq 50\%$  by 2031.
- Under-five mortality related to traditional herbs intoxication decreased by  $\geq 50\%$  by 2031.
- Decreased complaints from patients by  $\geq 50\%$  by 2031.
- Increased referral by traditional healers by  $\geq 50\%$  by 2031
- Increased number of churches implementing health-related strategies by  $\geq 50\%$  by 2031
- Referrals of children under five from traditional healers increased by 50% by 2031
- Health promotion strategies included cultural beliefs and practices inherent in the study area by 2023

**6.5.4 Strategy 4: Empower stakeholders and actors that play a role in mitigating factors associated with causes of diarrhoea among children under the age of five years**

All stakeholders must play their role in implementing the HP and HSB strategies. Furthermore, for the appropriate implementation of strategies, public policy is of crucial importance<sup>(167)</sup>. The goal, objectives, critical success factors, and key performance indicators are indicated below.

#### *6.5.4.1 Goal 4: Effective facilitation of strategies implementation*

- **Strategic objective:** Fully implementation of strategies by 2023 and to achieve 90% customer satisfaction by 2031
  - i. Critical success factors:
    - Conduct monthly in-service training for health workers
    - Conduct monthly customer satisfaction surveys
  - i. Key performance indicators:
    - Monthly in-service training for health workers will be 100% adhered to by 2031.
    - 90% Customer satisfaction achieved in 2031

### **6.6 APPROACHES TO EMPOWERMENT OF THE PARENTS AND CAREGIVERS REGARDING PREVENTION AND MANAGEMENT OF DIARRHOEA OF CHILDREN UNDER FIVE**

Biological and physiological factors are essential for an individual's health. However, the social determinants that shape human interaction equally play an important role in health at the individual's family and community levels. Studies indicated that factors such as social and cultural norms and conventions, knowledge, attitudes, and behaviours play a significant role <sup>(175)</sup>. According to the results from the current study, diarrhoea prevalence was found to be high at 23.8%. 64% of parents and caregivers had poor knowledge about diarrhoea, 72% had negative attitudes, 40% had poor practice related to diarrhoea prevention and management, and 40% practised perineal cutting for prevention management under five of diarrhoea. Activities to be carried out to curb the situation are health promotion, social mobilization, health education, awareness creation, reinforcing child survival interventions, and social mobilization involving community involvement and participation. Parents' or caregivers' empowerment are indicated below.

#### **6.6.1 Health promotion**

Community leaders, community volunteers, community health workers, and nurses should play a critical role in carrying out preventative strategies such as equipping

community members with knowledge on appropriate sanitation practices, causes and management of diarrhoea amongst children under five, and appropriate health-seeking practices, thereby ensuring positive behaviour change. The agents should train active and well-respected members as volunteers in health education. According to the control of communicable diseases, the most educated or visible community members should be considered first.<sup>(176)</sup> Furthermore, MoHSS has played a big role in implementing several health promotion programmes aiming to improve the health of children under five; however, very little attention has been paid to cultural beliefs that can prevent parents/caregivers from adhering to such activities. Therefore, agents must ensure that the following activities are carried out to promote health promotion among children under five.

- Vaccination of  $\geq 90\%$  with Rotavirus vaccine
- Provision of immunization services by outreach teams and health facilities with active participation of community organizations and HEWs
- Deworming and giving vitamin A
- Training of all parents in oral rehydration therapy and management of mild diarrhoea to minimize mortality and morbidity in children under five
- Include health education related to cultural beliefs that can prevent parents from seeking help from hospitals during antenatal visits and during postnatal visits by health workers
- Teach parents/caregivers about the danger signs of diarrhoea that are culturally believed to be related to a child being possessed or possessing themselves.
- Reduce malnutrition in children under five by these actions:
  - Include health education about feeding children under five during antenatal and postnatal visits and immunizations.
  - Promote breastfeeding and discourage traditional beliefs that discourage breastfeeding
  - Monitor the weight of children under five and give health education about the signs of malnutrition that, according to local beliefs, are caused by something that does not require medical treatment.

- Refer malnourished children
- Promote exclusive breastfeeding of the newborn for at least six months and discourage detrimental traditional beliefs related to breast milk and breastfeeding.
- Give health education to parents about food and feeding practices for children under five.
- Organize health awareness sessions for disseminating health information to parents and caregivers for acute diarrhoea (causes prevention and management), diarrhoea danger signs, and harmful practices related to diarrhoea management and prevention to improve parents' or caregivers' health literacy
- Provision of safe drinking water to 80% of the families
  - Conduct public awareness on the benefits of drinking safe water
  - Coordination with other sectors to ensure access to safe drinking water for the entire communities
  - Promotion of the use of boiled water and methods such as water-purification tablets
- Ensure training of traditional healers and community health workers on different aspects of PHC
- Training kindergarten teachers about diarrhoea prevention and recognizing danger signs of diarrhoeal disease, and developing linkage between schools and health facilities
- Improve hygiene/environment of kindergartens, including safe drinking water
- Community education related to environmental health (safe drinking water sanitation and hygiene).
- Raise community awareness about danger signs related to diarrhoeal diseases since they are often considered as signs of a child being possessed in the region.
- Creation of community awareness on the benefits of good sanitation and hygiene

- Community mobilization to undertake preventive measures such as personal hygiene and how to refer and suspect diarrhoea danger signs  
Mothers' and caregivers' education on managing diarrhoea amongst children under five, including primary treatment with ORS.
- Mobilize making use of locally available materials to build latrines
- Promotion of healthy neighbourhoods through safe disposal of wastewater, excreta and solid waste

### **6.6.2 Social mobilization**

According to WHO,<sup>(177)</sup> social mobilization was developed from realizing that community participation is essential for development and sustainability. Involving the community members and all stakeholders will facilitate their multicultural development, promote good governance, and ensure transparency and accountability. Further work must be done to improve the responsiveness of appropriate HSB and health promotion strategies and programs aimed at health promotion, refining the policymaking and implementation process.

Community active participation involves engaging all community members of both genders in making decisions; therefore, the agents need to make continuous efforts and provide facilitating mechanisms to empower the recipients.

According to WHO,<sup>(177)</sup> community mobilization is a continuous process and requires the following objectives:

- i. Community sensitization to health-related aspects and HSB
- ii. Facilitating the transition process for recipients to play an active role
- iii. Highlight the significance of the organized efforts
- iv. Build recipients' capacity to take positions for decision-making and the self-development process.
- v. Identifying and making use of locally available resources
- vi. Encourage and build up recipients' potential and strength to cope with disagreements
- vii. Training for planning, implementation, and management of health promotion and HSB projects

- viii. Strengthening recipients/participants' skills and sustaining momentum towards achieving the goal of sustainable development.

### **6.6.3 Health education**

Health education is a vital tool that health practitioners use to prevent illness and promote health and well-being. Health education is used to aim for primary, secondary and tertiary prevention.<sup>(170)</sup>

- Primary prevention

Health education for primary prevention concentrates on preventing diseases, usually aiming at changing individuals' behaviour. During primary prevention, people are given the required information and education, and immunization campaigns and health education related to hygiene will help minimize diarrhoea incidents.

- Secondary prevention

Secondary preventions aim to minimize individuals' risk by encouraging early diagnosis and treatment of diseases to reduce the disease reoccurrence and limit the course of an illness. Seeking help at an early stage of the disease is an example of secondary prevention. During this stage, people are taught to differentiate deviations from ordinary and learn how to deal with signs and symptoms and seek help without delay.

- Tertiary prevention

Tertiary prevention ensures that sick people are treated; this includes health education promoting the proper use of medical services. Furthermore, people are persuaded to seek help at health facilities in good time.

### **6.6.4 Community involvement**

Communities should be involved in developing services to promote self-resilience and reduce dependence. Most of the health promotion programmes in the district are introduced to the community with minimal community involvement and without considering the local traditional beliefs that can negatively impact implementation and adherence. Therefore, the community's role must involve more than responding to services

planned and designed from the outside. The community should be actively involved in the entire process of defining health problems and needs, developing solutions, and implementing and evaluating programmes.

#### **6.6.5 Community empowerment**

The recipients need to be empowered based on the understanding that the community is the best judge of its problems and can undertake appropriate action for its solution. Therefore, community members should be trained to work with others and provide opportunities to make decisions and evaluate results. Furthermore, according to WHO, community participation involves:

- A concerted process of mobilization
- Initiation and process by some activist/s in the community
- Orientation regarding the purpose and benefits of community mobilization and empowerment
- Defining roles of stakeholders and community
- Help and assistance from partners for relevant aspects
- Commitment by all parties
- Ownership of the programme and underlying objectives
- Confidence in the capacity of the community activities.

#### **6.6.6 Intersectoral collaboration**

Approaches to health should relate to other sectors of development. The cause of ill health is not limited to the factors associated directly with health, and the paths to be taken to deal with ill health must not be solely health interventions. Factors such as education for literacy, income, supplementation of clean water, and sanitation improve housing ecological and sustainably, have a substantial impact on health, and require the involvement of different sectors. Involving different sectors can help with advocacy, programme implementation, marketing and mobilization of resources.

## **6.7 APPROACHES TO DEVELOP PERSONAL INDIVIDUAL SKILLS REGARDING PREVENTION AND MANAGEMENT OF DIARRHOEAL DISEASE**

In the current study, we identified diarrhoea-related beliefs and potentially harmful practices that are not safe and need to be discouraged. Nevertheless, locally recognized types of diarrhoea such as persistent diarrhoea, dehydration, vomiting, diarrhoea together with fever, the child being weak, lethargic and having diarrhoea containing milk, were interpreted as the child being possessed by their parents or by themselves. Furthermore, 64% of the parents/caregivers were classified as having inadequate knowledge, 72% had negative attitudes, 40% had poor practice, and 61% performed perineal cutting. Various methods can be used to develop personal skills, such as:

- Providing health education at health facilities,
- Making use of media,
- Conducting home visits,
- Involving parents/caregivers in health promotion programmes,
- Hold community meetings,
- Motivating parents/caregivers to join literacy programmes
- Conducting group discussions with parents/caregivers
- Conducting workshops with parents and caregivers
- Work with faith-based groups and traditional healers

## **6.8 APPROACHES TO ENHANCE APPROPRIATE HEALTH-SEEKING BEHAVIOUR AMONG PARENTS AND CAREGIVERS OF CHILDREN WITH ACUTE DIARRHOEA**

Findings from this study give evidence around the factors influencing parents and caregivers' HSB, which include factors related to parents' and caregivers' attitudes, beliefs, knowledge, and practices.

## **6.8.1 Approaches to enhance HSB**

To remedy the situation, the researcher considered using the approaches used in projects to influence attitudes and behaviours to be appropriate.<sup>(163)</sup> These approaches include parents' and caregivers' media activities, working with traditional leaders and faith-based groups, holding community meetings, adult literacy interventions, providing household-level visits and support, and implementing activities involving parents and caregivers.

### *6.8.1.1 Use media*

Media can be used to spread the message quickly and widely; therefore, health promotion messages and those supporting appropriate HSB should be disseminated over the radio and television. In addition to HP activities already established by the MoHSS, health professionals should emphasise challenges determined by the current study. In addition, the messages to be developed should be focused on the outcomes of this study, such as:

#### **Health Promotion**

- Prevention/discourage open defecation
- The motivation for toilet facilities
- Promoting washing of hands
- Discourage beliefs such as “Ovambo people will not die because of eating or drinking and using dirty things.”
- Encourage making use of clean water
- Discourage overclouded houses
- Promote ownership of radios
- Encourage vaccination of under-fives
- Promote safe feeding practices for children under-five
- Encourage breastfeeding and discourage negative beliefs related to breast milk and breastfeeding.
- Educate mothers/caregivers on the causes, prevention and prevention of diarrhoea among children under five.

## **Health-Seeking Behaviour**

- Discourage faulty perceptions related to causes of diarrhoeal diseases (e.g., diarrhoea can be caused by exposure to the sun, the child being possessed by parents, or child being possessed on its own, child possessed by a dog, mother's milk gone bad)
- Discourage spiritual beliefs such as prayers and anointing with water to cure diarrhoea
- Educate parents/caregivers on managing diarrhoea among children under-five years old.
- Educate parents about the danger signs of diarrhoeal disease
- Discourage perineal cutting, as well as other traditional practices for prevention, and encourage management of diarrhoea
- Discourage myths related to diarrhoea prevention and management of diarrhoea among children under five
- Educate parents/caregivers about causes, prevention and management and danger signs of diarrhoeal disease.
- Discourage stereotyping and victimization
- Discourage mothers'/caregivers' alcohol consumption and giving children under five alcohol
- Discourage elderly influences related to young generations adhering to traditional practices in the management of diarrhoea

Furthermore, best practice examples of activities working towards social change should be aired over the radio and TV with dramas featuring sympathetic characters who provide new information on the issue and community dialogue-based events to create spaces for reflection about crucial topics.

### ***6.8.1.2 Holding community meetings***

Community meetings are often used to alleviate potential resistance and ensure that progress is maintained beyond a project's lifetime by involving community members in an intervention, as they can help reach many people at once.<sup>(177)</sup> Community meetings should be held on a monthly basis, facilitated by nurses and HEWs. Furthermore, meetings

are a good entry-point for creating room for reflection and mobilization around messaging on the acceptability of certain norms, including those related to HSB. In addition, the researcher will hold a one-week workshop with the nurses and HEWs to introduce the strategies to enhance the implementation of the proposed strategies toward desired HSB.

#### *6.8.1.3 Working with faith-based groups and traditional healers*

Faith leaders and traditional can be influential in communities; therefore, obtaining support from religious, traditional, and opinion leaders effectively ensures project interventions are contextually and culturally appropriate. Since they can reach out to community members through existing forums, their influence can help identify and eliminate fears or myths around issues. Hence, the involvement of spiritual and traditional leaders to achieve community engagement must be effectively contextualized to ensure relevance and appropriateness.

#### *6.8.1.4 Parents' and caregivers' health literacy*

Various studies have reported the mother or caregiver's level of education to be associated with diarrhoea prevalence and inappropriate health-seeking behaviour.<sup>(137)</sup> Existing literacy programmes need to be promoted to include most illiterate adults. Therefore, improving parents' and caregivers' health-related literacy will facilitate enhancing appropriate health-seeking.

#### *6.8.1.5 House-level visits and support*

Household-level visits are a common methodological tool in initiatives seeking to influence community attitudes and behaviour. Several studies show their effectiveness on behaviour change, particularly concerning stopping to smoke a cigarette.<sup>(169)</sup> In the sphere of HSB, this method can be used to create discussions with heads of households or parents and caregivers about the potential danger of diarrhoeal disease and harmful practices currently being practised in the study area. In

the Ohangwena region, house-level activities are carried out by the HEWs; therefore, motivation for more HEWs is required for the proper implementation of the strategies.

#### *6.8.1.6 Community Involvement*

Community involvement plays a role in upholding or renegotiating norms through their attitudes and behaviours; it is crucial to involve village heads, household heads, and community and political leaders who are the status quo 'gatekeepers' and make decisions regarding resource allocation. Furthermore, factors influencing health and health-seeking behaviour are influenced by several factors. These factors include knowledge, attitudes, social and cultural norms, conventions, and behaviours. Social and Behaviour Change Interventions (SBC)

### **6.9 STRATEGIES AND ACTIVITIES TO BE ESTABLISHED TO EMPOWER THE STAKEHOLDER/AGENTS (TRAINERS)**

Health workers need to be reminded that improving health outcomes may require more than just improving the quality or coverage of health products and services. Still, it requires changing health-seeking behaviours, individuals and communities, and the norms underpin those behaviours.<sup>(169)</sup> Social and behaviour change (SBC) interventions include interventions that seek to change behaviours by addressing knowledge, attitudes, and norms. Furthermore, the SBC interventions are critical to ensuring that people who are most in need can access available health care. SBC promotes communication between health providers and clients, families, and couples and engages community leaders and other influencers to promote the adoption of healthy behaviours and practices.

To be able to raise awareness aiming for social and behaviour challenges, awareness programmes should include:

- Increase demand for available commodities and services.
- Foster sustained changes in behaviour by shifting attitudes, addressing norms, and reducing barriers to a consistent practice of healthy behaviours.
- Support healthcare workers (nurses and HEWs) by building skills and addressing biases that present barriers to care.

- Build the capacity of organizations to implement and manage SBC interventions.

### **6.9.1 Approaches to empower health workers**

In-service training needs to be conducted aiming to introduce the health workers to the developed strategies. Furthermore, the following activities need to be carried out:

- Provide an environment conducive for the self-development of HEWs, parents, and caregivers.
- Training of HEWs needs to include aspects related to cultural beliefs and practices and how to handle such.
- Establish a mechanism for a traditional healer to co-operate with health workers in practices related to diarrhoea and other under-five ailments, prevention and management, and control at the community level.
- Supervise, harmonize and coordinate local resources through a community-based committee responsible for health-related problems that affect people's livelihood.
- Build partnerships with local village heads and local government with local and international private sector players to make safe drinking water and accessible toilet facilities to promote health in poor rural communities and informal settlements.
- Advocate for budget allocation for continuous support to integrated under-five health-related programmes.
- Give clear messages during health education for people to understand the danger of harmful practices related to diarrhoea management or any other under-five diseases.
- Conduct customer satisfaction surveys annually.

The descriptions of the strategies based on Howe's guiding principles (c@ps) are summarised in Table 6.4 .

Table 29: Strategies to enhance parents'/caregivers' HSB and prevention & management skills about diarrhoea among children of under five in the Ohangwena Region

<b>The purpose: To promote the health of children under five and enhance parents/caregivers' appropriate HSB in the Ohangwena region</b>					
<b>Vision: To improve the health status and well-being of children under five in the Ohangwena Region, with an enabling environment to provide timely quality healthcare that is efficient, acceptable and accessible for all.</b>					
<b>Mission: To improve parents'/caregivers' health literacy and promote the health of children under five in the Ohangwena region</b>					
<b>Values:</b> Relevant, Timely, Accessible, Credible, Actionable, Understandable					
<b>Goal</b>	<b>Objectives</b>	<b>Strategies</b>	<b>Responsible person</b>	<b>Critical success factors</b>	<b>Key performance indicators</b>
1.To promote health in children under five and ensure reduction of acute diarrhoea	To reduce the prevalence of acute diarrhoea among children under five from 23.8% to 10% by the end of 2031.	1. Empower parents/ caregivers in terms of the causes, management, treatment and prevention of diarrhoea among children under the age of five years	Program administrators, Nurses, Doctors and HEWs	<ul style="list-style-type: none"> <li>- Conduct a health survey to determine the prevalence</li> <li>- Improved water hygiene and sanitation</li> <li>- Improved environmental hygiene.</li> <li>- Increased deworming of children under five and admiration of vitamin A</li> <li>- Increase the number of home visits made by HEW</li> <li>- Increased Rota virus immunization</li> <li>- Open defecation-free project initiated and implemented</li> <li>- Improve nutrition status of under-five children</li> <li>- Improve access to clean water</li> <li>- Improve house hold conditions</li> </ul>	<ul style="list-style-type: none"> <li>- Diarrhoea prevalence decreased by &gt; 10% by the end of 2031</li> <li>- &gt;90% of children under five received deworming and vitamins. By the end of 2031</li> <li>- The number of home visits increased by &gt; 10% by the end of 2031.</li> <li>- &gt;90% Rota virus immunization coverage by the end of 2031</li> <li>- &gt;80% House with access to improved toilet facilities by the end of 2031</li> <li>- Malnutrition decreased by &gt; 10% by the end of 2031</li> <li>- 90% of the community members will have access to clean water by 2031</li> </ul>

					- 90% of people living in the informal settlement have been resettled. By 2031
2. Build capacity and improve parents' or caregivers' perceptions, knowledge, attitudes and practices related to prevention, causes, symptoms, and management of diarrhoeal disease	To improve parents/ caregivers' negative perceptions related to causes of acute diarrhoea among children under five from 73% to 10% by the end of 2031	2. Develop personal/ individual skills	-	- Promote community enrolment - Improved parents' and caregivers' attitude - Improve parents'/caregivers' knowledge	- Parents' and caregivers' perceptions improved by 60% in 2031 - 90% of community members involved by 2031
	Reduce parents' and caregivers' poor knowledge related to prevention, causes, symptoms, and management of diarrhoeal diseases from 64% to 10% by the end of 2031		Nurses, Doctors and HEWs Program administrators	- Improved parents' and caregivers' knowledge and skills - Improved parents' and caregivers' attitudes - Improved management of diarrhoea among children under five	- Mother or caregiver knowledge improved by 90% by 2031%. - Proper home management of diarrhoea increased by >90% by 2031%. - Mother/caregiver attitude towards diarrhoea in children under five improved by 90% by 2031%. - Home management of diarrhoea with ORS appropriately adhered to by 2031%. o Perineal cutting and other traditional practices in the management of childhood diarrhoeal disease decreased by 80% in 2031
	Reduce parents' or caregivers' negative attitudes related to prevention, causes, symptoms, and management of the diarrhoeal disease from 72% to 10% by the end of 2031		-		

	Reduce parents' harmful practices (perineal cutting) from 61% to 5% by the end of 2031		-		
3. To ensure that help for children's ailments, including diarrhoea, is sought on time	To enhance parents/caregivers' appropriate health-seeking behaviour/practice from 27% to 80% by the end of 2031	3. Enhance appropriate health-seeking behaviour	Nurses, Doctors, and HEWs (Program administrators)	<ul style="list-style-type: none"> <li>- Improved utilization of health facilities for the management of diarrhoeal disease among children under the age of five years</li> <li>- Referrals from traditional children under the age of five years with diarrhoeal</li> <li>- Improved health workers' attitude</li> </ul>	<ul style="list-style-type: none"> <li>- Healthcare for children with diarrhoea sought on time by &gt;90% of the parents/caregivers</li> <li>- Under-five mortality related to diarrhoeal disease complications decreased by &gt;90% by 2031%.</li> <li>- Under-five mortality related to traditional herbs decreased by 99% by 2031%.</li> <li>- Increased referral by &gt;90% by 2031%.</li> <li>- Decreased complaints from patients by &gt;80% by 2031%.</li> </ul>
		4. Strengthen community action -		<ul style="list-style-type: none"> <li>- Improved implementation of health management of diarrhoea among children under five</li> <li>- Increase community involvement in health-related activities</li> </ul>	<ul style="list-style-type: none"> <li>- Mother or caregiver knowledge improved by 90% by 2031%.</li> <li>- Proper home management of diarrhoea increased by &gt;90% by 2031%.</li> <li>- Mother or caregiver attitude towards diarrhoea amongst children under five improved by 90% by 2031%.</li> </ul>

					<ul style="list-style-type: none"> <li>- Using perineal cutting and other traditional practices related to the management of childhood diarrhoeal disease decreased by 80% in 2031</li> <li>- Home management of diarrhoea with ORS appropriately adhered to by 2031%.</li> </ul>
4. To facilitate strategies for implementation	Strategies fully implemented by 2023	5. Empower stakeholders and actors that play a role in mitigating factors associated with causes of diarrhoea among children under the age of five years	MoHSS Program administrators	- Conduct monthly in-service training for health workers	- Monthly in-service training for health workers adhered to 100% by 2031.
5 To improve customer satisfaction	To improve customer satisfaction to 100% by 2031		Nurses, Doctors and HEWs	- Conducted customer satisfaction surveys annually	o 0% Customer complaints by the end of 2031

## **6.10 TIMEFRAME**

These strategies outline the strategic plan aiming to achieve the desired future results; a ten-year frame was agreed upon by most panellists who took part in focus group discussions to propose and endorse strategies. Ten years was agreed upon with the understanding that behaviour change cannot change overnight.<sup>(154)</sup> Furthermore, the team acknowledges that the specific timeframes for implementing to drive each objective cannot be easily defined at this juncture because of certain barriers such as:

- Unknown funding situations in the future
- Future effects of the COVID-19 pandemic and
- Lack of resources.

## **6.11 PHASE FOUR: EVALUATION OF HP STRATEGIES TO ENHANCE PARENTS/CAREGIVERS' HSB AND PREVENTION AND MANAGEMENT SKILLS ABOUT DIARRHOEA AMONG CHILDREN UNDER FIVE IN THE OHANGWENA REGION**

In Phase four of the current study, the evaluation of these strategies adopted a formative independent approach. During this phase, the developed strategies were evaluated whether the health promotion strategies were developed according to the expectations and if they could achieve the expected results. Six experts in the field of public health from the University of Namibia (UNAM) (School of Public Health and School of Medicine) and Namibia University of Science and Technology (NUST) evaluated the strategies. In the current study, participants were regarded as experts based on their years of experience in academia, public health and strategic planning. Chapter 5 of this study comprises the conceptual framework for strategies development, and Chapter 6 comprises the detailed description of strategies development and implementation sent to the six experts in the field of public health for evaluation. Furthermore, the evaluation of the strategies was based on the criteria of clarity, simplicity, generality, accessibility, importance and relevance as proposed by Chinn and Kramer.<sup>(178)</sup> The evaluators of this strategies considered the following aspects and questions.

- Clarity of the strategies
- Do you think the strategies are easy to understand?
- Are the strategic objectives achievable?
- Are the strategic objectives practical?
- The generality of strategies
- Can these strategies be applied in other situations?
- Accessibility of strategies
- Do you think the strategies are very important and significant for public health?
- Clinical significance and usefulness of strategies
- How relevant are the strategies?

The inputs proposed by the experts were effected. Furthermore, a summary of the six evaluation reports is provided in table 30. Moreover, the report from each expert is annexed in annexure K.

*Table 30: Summary of Experts' evaluation of the conceptual framework for strategies development and the developed strategies for implementation*

Experts	Evaluation criterion					
	Clarity	Simplicity	Generality	Accessibility	Importance / utility	Relevance/ applicability
Expert 1	Yes, strategies are clear and easily understood	Strategies are user-friendly and could be implemented without many changes	Strategies are described in detail. It could be replicated in other gastrointestinal disorders and specifically diseases linked to children under the age of 5 years	Its accessibility depends on the envisaged dissemination plan of the researcher	The strategies are significant to circumvent potential public health issues among children and subsequently reduce mortality among the same target group	The strategies are relevant to addressing the current situation based on the study findings e.g., 64% reportedly had inadequate knowledge, 72% had negative attitudes, and the minority, 8%, had good practices

Experts	Evaluation criterion					
	Clarity	Simplicity	Generality	Accessibility	Importance / utility	Relevance/ applicability
Expert 2	They are clear. However, there is a need to explain explicitly how these came about in the Delphi procedure.	They are. The researcher should have tried to be brief in most instances to ensure a good read. I suggested the use of tables in some cases. I further suggest limiting on conceptual frameworks proposed to ensure simplicity. One key conceptual framework is adequate	Yes. However, for transferability, the researcher needs to be explicit with the Delphi procedure. They also need to state how and who developed the vision, mission, goals, objectives	The last table is key for the summary and accessibility of these strategies. A dissemination strategy can be proposed	Yes, they are important.	Yes

<p style="text-align: center;"><b>Expert 3</b></p>	<p>The strategies are clear but the candidate can explore ways of making these clearer including reconsidering the way of presentations of the contents as well as including some more practical examples of what agent and recipients can do at implementation levels. These could be added under approaches of implementations.</p>	<p>The strategies are to a certain extent understandable. However, the candidate should explore ways to enhance this understandability by paying attention to the use of connecting sentences and ensuring that the flow of information is smooth also for the stakeholders with moderate to low research and academic background. I have made some suggestions at specific sections in the main document reviewed</p>	<p>Yes, these strategies can apply in other settings because of the nature of the common approach required to tackle the disease under study and which currently a health concern in many regions of Namibia and is beyond.</p>	<p>The candidate is advised to ensure accessibility of this strategies beyond the thesis document to be made available in articles and handy IEC materials to be reachable to parents and other stakeholders such as community health assistants and even nurses and other clinical staff. Also, to present these materials in local languages as possible.</p>	<p>This strategy is useful and has clinical significance as it targets among others to increase the knowledge and skills of parents and caregivers how to prevent and manage diarrhoea. This strategy will contribute to curbing incidences and fatality of diarrhoea which is much needed as the study results indicate that, 73% of parents/caregivers were categorized as having practicing inappropriate health-seeking. In addition, factors such as perceived cause of diarrhoea, knowledge, attitude, and practices.</p> <p>Also, it will support the reduction of health services related factors that contributes to complications of diarrhoea morbidity by involving key</p>	<p>The strategies are relevant in that they target to work with parents and or caretakers as recipients and empowering them to take active part in diarrhoea prevention and control in their households with supports from health sector experts</p>
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Experts	Evaluation criterion					
	Clarity	Simplicity	Generality	Accessibility	Importance / utility	Relevance/ applicability
					stakeholders related to that for action.	

Experts	Evaluation criterion					
	Clarity	Simplicity	Generality	Accessibility	Importance / utility	Relevance/ applicability
Expert 4	<p>The major concepts i.e., agents, recipients, context, procedure, dynamics and terminus are explained. Also, other aspects like the five levels of the social-ecological model are well explained</p> <p><input type="checkbox"/> Most concepts are used in a manner consistent with their definitions</p> <p><input type="checkbox"/> The student related concepts well to the findings of Phase 1 and 2 studies as explained.</p>	Proposed strategies are easy to understand	The 3 proposed strategies in table 25 i.e., empowering parents/caregivers...; enhancing appropriate health-seeking behaviour; and empowering stakeholders and actors... can be applied to other public health situations, but with consideration of diversity of cultural settings as the study focused on Ohangwena region which may have unique cultural aspect	Provisions of the framework can easily be made accessible to target agents and recipients for action. However, there is need for explicit examples of messages targeted at identified issues, activities and insights on who, where, what, how, when, what frequency, resources, etc. for guidance on implementation. See comments in reviewed document	Yes, proposed strategies are important for addressing high prevalence of diarrhoea among the under-fives in Ohangwena region	They are relevant to address preventable diarrhoeal disease burden and preventable mortality of under-five year old children

Expert 5	<p>The candidate adopted a conceptual framework by Dickoff et al. (1968) to develop strategies for health promotion based on the study findings. A map is constructed which shows how the key concepts are interrelated, as indicated in Figure 32. The aforementioned Figure is labelled as Conceptual framework map of HSB (Health-seeking behaviour). However, the candidate did not acknowledge the source of that map. Nonetheless the Figure is clear, and examples of all the elements in the framework are listed.</p>	<p>The conceptual framework map is simple and easy to understand. The Figure of study agents might be somehow a challenge to a novel researcher or undergraduate student (Figure 33).</p>	<p>The developed strategies aim to promote health as well as to empower health-seeking behaviour of parents and caregivers for the under five children in Ohangwena region, particularly for diarrhoea. Although these strategies are developed with those specific reasons, they can be applied in other situations in public health regardless the condition.</p>	<p>The approaches to empower parents and caregivers regarding prevention and management of diarrhoea of children under five as well as to enhance appropriate health-seeking are explained, although there is no clear alignment with strategies. These approaches will guide the implementers and it will make it accessible to different health care workers in public health.</p>	<p>These strategies are important and will be useful in public health. They can be applied in other situation which affect the public other than diarrhoea.</p>	<p>The developed conceptual framework and strategies are relevant as they are based on evidence from the study findings. The strategies were presented to panel of experts for validation. Their participation indicated that these strategies are relevant to the proposed context and outcomes of the study.</p>
Expert 6	<p>The strategies are easy to understand, though a few may not be practical. E.g monthly customer satisfaction survey</p> <ul style="list-style-type: none"> <li>• Critical success factors are not linked to any actor, which may give room for delay in the anticipated outcome.</li> </ul>					

Experts	Evaluation criterion					
	Clarity	Simplicity	Generality	Accessibility	Importance / utility	Relevance/ applicability
	<ul style="list-style-type: none"> <li>• Applicability: Indicators are cleared defined and achievable given the time frame and availability of supporting resources.</li> <li>• Accessibility: The strategies are simplified and be applied in the proposed environment.</li> <li>• Importance: the strategies are very much relevant and significant in the addressing the health of children under five, which is a major public health concern.</li> </ul>					

## **6.12 SUMMARY**

This chapter highlighted the proposed strategies developed to promote health among children under the age of five and enhance appropriate health-seeking behaviours among parents and caregivers of children under five. The strategies were developed to be implemented in the Ohangwena Region to address issues related to the increased prevalence of diarrhoea among children under five and the health-seeking practice of parents and caregivers in the Region. It is anticipated that they will serve to resolve the matter at hand. The diagram depicting the strategic plan for HSB is presented at the end of the report as Annex L-M.

The next chapter, Chapter 7, presents the conclusion, contribution to the body of knowledge, limitations, and recommendations of the study.

## **CHAPTER 7**

### **DISCUSSION, CONCLUSION, LIMITATION AND RECOMMENDATIONS OF THE STUDY**

#### **7.1 INTRODUCTION**

In the current chapter, the researcher presents the conclusions based on this study's findings, illustrating whether the purpose of the study's objectives has been achieved. Hence the researcher focuses on the entire study outcomes and provides recommendations based on the findings. Furthermore, the contributions that were made by the study and the study limitation of the study are presented.

#### **7.2 THE DETERMINATION OF THE STUDY**

This study sought to answer the following questions: What is the epidemiology of diarrhoea in the study area? What are the factors associated with diarrhoea prevalence? What are the parents' or caregivers' perceptions related to the causes of diarrhoea? What are the parents' knowledge, attitude, and practices related to diarrhoeal prevention and management, and what are the key factors influencing health-seeking behaviour and management of diarrhoea among children under five? The main purpose of this study was to develop strategies to enhance appropriate health-seeking behaviour. For the goal to be achieved, the study employed a mixed methodology approach. Hence FGD, and individual interviews were conducted, and questionnaires were used to collect the data that provided evidence of the need to develop the strategies.

The qualitative research methods collected data from parents or caregivers who attended the selected health facilities, the doctors and nurses employed at the selected health facilities, HEWs, priests, and traditional healers providing services in the selected constituencies. As per quantitative research methods, data was collected from randomly selected households from the randomly selected constituencies. This chapter discusses the study's major findings and their implications for policy research, including the development of strategies.

### **7.2.1 Integration of theories**

Various theories were integrated and guided the researcher during the proposal development up to strategies formulation. Kroeger's framework for health-seeking behaviour (1983) recommends using a mixed methodology when conducting studies aiming to study health-seeking behaviours, and it includes aspects underlying the typical health-seeking behaviour of communities in developing countries. The researcher adopted McKinlay's-Health-seeking behaviour in context (1972) approach by including the six proposed approaches in the developed questionnaire. Hence, McKenly's theory-guided in the development of the strategies.

In addition, the practice theory of Dickoff, James and Wiedenbach (1968) was used to conceptualize the study findings. Lastly, strategies in this study were developed using Howe's Compass Aligned Performance system (1999)

## **7.3 CONCLUSIONS**

The conclusions and recommendations from the current study are drawn from the objectives of the three phases of the study, namely: Phase 1, situational analysis; Phase 2, development of a conceptual framework for the development of strategies for appropriate health-seeking and health promotion in Ohangwena Region and Phase 3, development, and verification of strategies for appropriate health-seeking. Furthermore, the details related to the study's conclusions are described below.

### **7.3.1 Objective 1a: Determine and describe epidemiology and factors associated with diarrhoea among children under five in the Ohangwena region. [Phase 1]**

This study aimed to determine the epidemiology and assess the factors associated with acute diarrhoea amongst children under five years of age in Engela district in the Ohangwena region, Namibia.

A cross-sectional study was conducted between January and March 2019 in Engela district, Ohangwena region, Namibia. A total of 530 households were included in this study. A structured questionnaire was administered through face-to-face interviews. Descriptive statistics were used to describe the socio-demographic and epidemiological data of diarrhoea. Furthermore, logistic regression analysis was used to determine the factors associated with the prevalence of diarrhoea.

The study found a prevalence of 23.8% for diarrhoea in the two weeks preceding the survey amongst children under five. The strongest predictor of the prevalence of diarrhoea was the informal settlement residential area, with an odds ratio of 36.42 and with diarrhoea prevalence of 48%. Furthermore, several factors contributed to diarrhoea prevalence, such as Overcrowding of 5-10 people per HH 33%,

- Child's immunization is not up to date 33.8%,
- The child with malnutrition 27.1%,
- Households with no access to tap water 46.7%,
- Households with no toilets available 30.5% and poor hygiene 30.5% contribute to a high prevalence of diarrhoea.
- Nature of communication (no access to media 31.5%)
- Nature of the building material (corrugated iron/zinc 33%)

The district's prevalence of diarrhoea in children under five remains a public health problem. In addition, our study reveals a high prevalence of diarrhoea of 23.8% compared to the national Figures (17%). Furthermore, the prevalence in the informal settlement was 48%. According to the study results, independent predictors for diarrhoea prevalence were children under five whose immunization was not up-to-date, who were residents of the informal settlement, living in houses without walls or with walls made of corrugated iron, and who had no access to piped water or toilets, were significantly associated with diarrhoea prevalence, as well as poor nutritional status.

### **7.3.2 Objective 1b: Explore and determine parents' or caregivers' perspectives towards the causes of diarrhoea in the study area prevalent in Engela District in the Ohangwena region [Phase 1]**

The aim was to explore parents' or caregivers' perspectives on the causes of diarrhoeal disease amongst children under five in the district.

This objective was achieved by collecting data through key-informant interviews (nurses, doctors, and HEWs), in-depth interviews with traditional healers, priests, and FGD interviews with parents or caregivers. The nurses, doctors, traditional healers, and priests were selected by employing purposive sampling based on the inclusion criteria. The findings comprised five themes: perceived beliefs as the cause of diarrhoea, perceived factors associated with cause diarrhoea and perceived cause of diarrhoea-related mortality.

- Perceived beliefs as the cause of diarrhoea.  
Many parents and caregivers perceived diarrhoea as caused by myths, spiritual beliefs, and traditional and spiritual beliefs.
- Perceived factors associated with causes of diarrhoea  
Health workers perceived diarrhoea in the study area to be related to unhygienic practices, lack of access to clean water, lack of toilets, lack of information, area of residence, poor feeding practices, and under-five nutritional status.
- Perceived cause of diarrhoea-related mortality  
The health workers perceived diarrhoea-related mortality as caused by parents' and caregivers' lack of urgency to seek health care, diarrhoea complications, poisoning because of traditional treatment herbs, malnutrition, and mother or caregiver negligence.

Some parents or caregivers perceived diarrhoea to be related to spiritual powers. Furthermore, some diarrhoeal disease is believed to be caused by a child being possessed—by the parents or on their own. Some plants flowering in season are also believed to cause diarrhoea. On the other hand, health workers indicated factors such as poor hygiene and sanitation, lack of toilets, shortage of water supply, shortage of water purification sachets, parents' ignorance and negligence, parents' lack of information, area of residence, improper food storage, lack of exclusive breastfeeding and malnutrition to be the factors contributing to diarrhoea prevalence in the district.

Thus, negative perceptions often contribute to delayed health-seeking behaviour. As a result of negative perceptions, parents are expected to first visit traditional healers for perineal cutting and scratching the child's mouth or to manage chronic diarrhoea with herbal medications, which according to health workers, also contribute to under-five mortality. The results of the current study highlighted factors perceived to cause diarrhoea morbidity and mortality that was not reported before the region.

### **7.3.3 Objective 1c: Determine the knowledge, attitude, and practices among parents or caregivers regarding acute diarrhoea in Engela District in the Ohangwena region [Phase 1]**

The study aimed to determine parents' and caregivers' knowledge of the aetiology, prevention, and management of acute diarrhoea among children under five in the Engela District; in addition, to determine the attitudes on the cause, management, and prevention and caregivers' health-seeking practices regarding prevention and management of diarrhoeal disease, and attitudes related to causes of diarrhoea among children under five. Data were collected from 530 randomly selected households, and a structured questionnaire was administered through face-to-face interviews. In addition, the quantitative data and the focus group discussions with parents, caregivers, and HEW's included information related to parents' practices. Findings from the study show:

- Parents or caregivers with inadequate knowledge 64%
- Parents or caregivers with negative attitudes 72%
- Poor practice related to the management of diarrhoea among children under five 40%
- More than 61% of parents indicated practising perineal cutting to prevent or manage diarrhoea.

Overall, the level of knowledge among parents/caregivers regarding the causes, prevention, and management of diarrhoeal disease was low. Parents'/caregivers' knowledge was significantly associated with their age category, residential area, marital status, and radio ownership. Therefore, many parents/caregivers in the region need more knowledge to improve their children's prevention and management of diarrhoea. Furthermore, the majority, 72% of the parents or caregivers, were categorized as having negative attitudes related to the causes, management, and prevention of diarrhoeal disease. Logistic regression revealed factors such as education level, residential area, age category, and radio ownership as independent predictors of attitude. Therefore, many parents in the region need improved attitudes to prevent and manage diarrhoeal disease. Additionally, 40% of the parents and caregivers had poor practices related to preventing and managing diarrhoea. According to some participants, diarrhoea has different categories.

Furthermore, they indicated that some particular categories of diarrhoea, such as a breastfed child passing loose stools that contain milk, or a child with diarrhoea who is showing signs related to what WHO<sup>(76)</sup> categorizes as danger signs, are caused by a child being possessed; therefore, according to some parents/caregivers and some HEWs, such types of diarrhoea are not managed with western medicine. They further indicated that it is time-wasting to take the child to health facilities in such cases. Parents or caregivers indicated that managing such types of diarrhoea requires one or both parents to go for a perineal examination and cutting. Children may also need to go to a traditional healer for oral examination and to scratch in the mouth. Furthermore, our study revealed that 61% of the parents and caregivers practice perineal cutting as part of diarrhoea management and prevention; more surprisingly, HEWs admitted that they believe in such practices and even practice them as part of managing their children's diarrhoea. This study has highlighted how cultural beliefs can hinder the timely management of acute diarrhoeal disease and contribute to the region's mortality of under-fives that was not reported before in the study area. Therefore, much needs to be done to sensitize parents and caregivers and to improve parents' health literacy for better knowledge of management and prevention of diarrhoea and appropriate health-seeking.

#### **7.3.4 Objective 1d: Explore and determine factors associated with health-seeking behaviours of caregivers living in Engela District in the Ohangwena region [Phase 1]**

This study aimed to explore and determine factors associated with poor health-seeking among parents and caregivers of children under five years of age with acute diarrhoea in the Engela district in the Ohangwena Region and develop strategies to remedy the situation. This objective was achieved by collecting data through a structured questionnaire, FGD, and individual interviews. Diarrhoea prevalence was high; 24% of the children were reported to have suffered from diarrhoea. One hundred and twenty-six parents or caregivers whose children had had diarrhoea in the previous two weeks before the survey were purposely selected and interviewed to determine their practices related to managing their children's diarrhoea and health-seeking practices. More than half of the participants (61.1%) were from rural areas, and 38.9% were from an informal settlement at Engela. The study showed that appropriate health-seeking practices for childhood diarrhoea remain challenging among Namibia's rural and

informal settlements. According to the findings, 73% of the parents or caregivers were categorized as having inappropriate health-seeking behaviour, whereas only 27% of parents or caregivers did seek appropriate healthcare for their children. Remarkably, the study shows that most parents/caregivers did not seek proper healthcare or use ORS, which is common knowledge as an important way of managing diarrhoea. Furthermore, some caregivers took more than 14 days to seek treatment for the disease, suggesting that parents/caregivers may not fully know the dangers associated with diarrhoea. The findings from FGD and individual interviews consisted of seven themes: cultural factors, health services factors, the parent or caregiver-related factors, physical accessibility, characteristics of disease and symptoms, traditional practices, and biomedical care. Below find the conclusions made based on the findings of the emerged themes:

#### *7.3.4.1 Cultural factors*

Cultural factors such as: traditional beliefs, using traditional healers and traditional medicines, being stereotyped by peer groups, parents victimized if not obeying the elders' instructions, belief that teething causes diarrhoea, spiritual beliefs, and family and social networking contributed to delay in health-seeking.

#### *7.3.4.2 Health services factors*

Parents and caregivers indicated that factors such as staff shortage, nurses' attitudes, overcrowded health facilities, long waiting times, and inadequate service provision had contributed to their reluctance to take their children to health facilities.

#### *7.3.4.3 Parents/caregivers related factors.*

According to health workers, the parent's ignorance, negligence, alcohol consumption, lack of urgency, accepting elders' influence, social networking, inadequate knowledge, multiple tasks, and practices contributed to poor health-seeking.

#### *7.3.4.4 Physical accessibility*

The study found that shortage of health facilities in the region, long distance to a healthcare facility, lack of transport money, and clinics not functioning on weekends are some factors that contributed to inappropriate health-seeking.

#### *7.3.4.5 Characteristics of disease and symptoms*

Diarrhoea containing blood or fever were two factors that necessitated the parents or caregivers to use health facilities without delay.

#### *7.3.4.6 Traditional practices*

Harmful practices in managing childhood diarrhoea are prevalent in the study area. Such practices are related to cultural beliefs widespread in the region, including perineal cutting (even some HEWs agreed that they believe and practice this—and other methods for managing diarrhoea among children under five. Some parents reported that nurses had advised them to go for perineal examination and cutting for their children suffering from chronic diarrhoea.

Additionally, children with diarrhoea were reported to have been taken to a traditional healer for oral examination and scratching of their mouths to manage diarrhoea among children under five. Some practices required finding a dog to kill for the child to eat its meat, given the children to treat chronic diarrhoea. In some cases, insects are sought to suck the blood of children having complications of chronic diarrhoea, referred to as “endjadja”. Additionally, it is believed that breast milk can get spoiled and cause diarrhoea in babies that are being breastfed; hence, some parents indicated they had stopped breastfeeding because of such beliefs. Giving enemas with fluids containing a mixture of flowers is also used to treat the diarrhoea that is believed to be caused by flowering plants, as well as an enema of a mixture of water and faeces of birds or dogs. Another treatment involves certain types of herbs that are given orally or in an enema; if given in large quantities, this can lead to under-five mortality, as reported by doctors that participated in the study. In conclusion, some types of diarrhoea are perceived to be caused by teething, eating bad food, playing under the sun, mother’s breast milk going bad, a child being affected by plants flowering, etc. In addition, it is believed that some of these forms of diarrhoea do not require any treatment at all.

Inappropriate management of diarrhoea episodes can result in a higher risk of mortality through increased levels of dehydration due to prolonged diarrhoea, permanent health consequences related to stopping breastfeeding at a tender age, and nutritional restrictions.

#### *7.3.4.7 Biomedical care*

Mother categorized as having appropriate health-seeking indicated seeking help on time from health facilities and using ORS. However, some indicated buying diarrhoea medications from pharmacies.

In conclusion, the study findings depicted the factors that influence health seeking in the district that were not reported before; hence, they were not considered in the available health promotion strategies nor in the training programs of health workers and HEWs.

#### **7.3.5 Objective 2: Develop a conceptual framework for the development of strategies for appropriate health-seeking behaviours in the Ohangwena region [Phase 2]**

Phase 2 of the study was based on the outcome of the situational analysis of Phase 1. Furthermore, the conceptual framework was developed based on the Practice Theory framework of Dickoff et al.<sup>(36)</sup>, adapting the survey list, which was used to form the foundation of the development of the strategies of the current study. The survey list of the current study included the following: the agent (Nurses, doctors, HEW's, and the researcher), the recipient (parents and caregivers), context (health facilities, schools, churches in the Ohangwena Region), dynamics (Epidemiology factors associated with diarrhoea prevalence, perceived causes of diarrhoea, lack of knowledge in terms of cause, management, sign symptoms and prevention of diarrhoea, or negative attitudes towards the cause, management, and prevention of diarrhoea. In addition, poor practice in terms of prevention and management and factors associated with health-seeking behaviour), procedures (development of strategies to promote health in children under five and enhance appropriate HSB, and terminus (proper management of diarrhoea amongst children under five and appropriate HSB. Moreover, developing a conceptual framework assisted the researcher in establishing the connections between practice and theory.

### **7.3.6 Objective 3: Develop strategies to promote health and enhance parents' or caregivers' appropriate health-seeking behaviour for treating acute diarrhoea among children under five years of age in the Namibian context [Phase 3]**

The aim of Phase 3 was to develop and verify the strategies to promote health in children under the age of five years and equip parents or caregivers in the Ohangwena Region with appropriate health-seeking behaviour to deal with acute diarrhoea in the children.

During this phase, strategies were developed based on the findings from Phases 1 and 2. Furthermore, the draft strategies were reviewed and verified by different subject experts in public health and PHC. The current study's strategy development process was based on Howe's Compass Aligned Performance System (c@ps)<sup>(37)</sup>, which includes critical components of the strategies such as key performance indicators, strategic objectives, and critical success factors for the proposed actions and values and vision.

Furthermore, based on the study findings, the researcher has developed strategies to enhance appropriate health seeking that are unavailable in the region.

## **7.4 STUDY LIMITATIONS**

The current study was limited to the Ohangwena Region, predominately occupied by the Kwanyama tribe in Namibia. Hence, the results cannot be generalized to other regions inhabited by different Namibian tribes with different health-related cultural beliefs, values, and practices.

It is imperative to note that some meanings might have changed slightly because the data was translated from English to Oshikwanyama, and some vernacular concepts have no English equivalent and vice versa. However, the data was translated with the assistance of English and Oshikwanyama experts. In addition, the study mainly comprised participants from the villages and very few from urban areas because there are few urban residences in the randomly selected constituencies in the district.

## **7.5 DELINEATION OF THE STUDY AREA**

The researcher, before data collection, had selected and delineated the geographic boundaries of the anticipated study area. However, the researcher had to limit the study

area size since the Ohangwena region is large with poor road infrastructures with some parts that can not be accessed by small vehicles but only those with 4x4. Therefore, areas that are easily accessible, such as the Engela Health health district, were considered part of the study. Furthermore, based on the selection of the study site, two main factors drove the researcher to limit the size of the study area such as:

- Time and resources – The researcher, a PHD student, and an employee had limited time to finish the study. Resources were also limited since the researcher was not sponsored to carry out the study but paid out of her pocket.
- Population consideration –The Engela health district comprises 62.3% of the population of the Ohangwena region.

## **7.6 CONTRIBUTIONS TO THE BODY OF KNOWLEDGE**

The current study's findings produced valuable information that uncovered the actual challenges related to diarrhoea prevalence and its management among children under five in the study area. In addition, this study contributed to the scientific body of knowledge in the following ways:

### **7.6.1 Identification of challenges related to a high prevalence of diarrhoea and its management Ohangwena Region**

This study contributed to new knowledge related to HSB for parents and caregivers, an area that has not been explored before in the study area. First, this is done by identifying factors associated with poor health-seeking behaviours in the Ohangwena Region in Phase 1 of the study. Secondly, the study has identified parents' perceptions of the causes of diarrhoeal disease and, thirdly, parents' and caregivers' knowledge, attitudes, and practices associated with managing diarrhoeal disease among children under five.

### **7.6.2 Conceptualization of basis of health promotion and HSB strategies**

A conceptual framework was developed, which formed the foundation for the study. In addition, this can be used by future researchers as a reference document.

### **7.6.3 Strategies for health promotion and enhancing parents' and caregivers' HSB in Ohangwena Region**

To enhance appropriate health-seeking behaviours, strategies were developed that are not being used in the region. These strategies will ensure that the challenges identified are addressed during health promotion-related activities.

### **7.6.4 Published articles**

Two articles are already published in high-impact journals based on the results of the current study, namely:

- **Bauleth, M. F.,** Mitonga, H. K., & Pinehas, L.N. (2020). Factors associated with the nutritional status of children under-five years of age with diarrhoea in Ohangwena Region, Namibia. *International Journal of Healthcare*. 2020 May, Vol. 6, No. 2
- **Bauleth, M. F.,** Mitonga, H. K., & Pinehas, L.N. (2020). Epidemiology and factors associated with diarrhoea among under-five-year-old children in the Engela District in the Ohangwena Region, Namibia. *African Journal of Primary Healthcare & Family Medicine*

## **7.7 RECOMMENDATIONS**

The recommendations of the current study are based on the challenges established from the present study, such as: epidemiological factors that are associated with the cause of diarrhoea, perceived causes of diarrhoea, lack of knowledge in terms of cause, management and sign and symptoms, negative attitudes towards cause, treatment, and prevention, poor practice in terms of prevention and management and factors that are associated with health-seeking behaviour. Furthermore, recommendations included the need for teaching, practice, and future research. Recommendations based on each concept are discussed below:

### **7.7.1 Epidemiological factors related to the cause of diarrhoea**

Based on the findings from this study, we recommend the following to MoHSS together with other line ministries to:

- Strengthen water hygiene and sanitation programmes (WASH)

**Responsible person:** Nurses, Doctors and HEWs

- Together with the village council, initiate and implement a project to circumvent open-air defecation.

**Responsible person:** Directorate of PHC, local government, religious leaders, traditional leaders

- Increase deworming and provide vitamin A to children under five

**Responsible person:** Directorate of PHC

- Increase Rotavirus immunization

**Responsible person:** Directorate of PHC

- Strengthen programmes related to children under five nationally

**Responsible person:** Directorate of PHC and policymakers

- Increase provision of water purification sachets at health facilities

**Responsible person:** In-charge of the health facilities

- Strengthen community participation and involvement

**Responsible person:** Nurses, Doctors, HEWs and Religious leaders

- Strengthen and ensure regular health education sessions at health facilities to increase parents'/caregivers' knowledge about diarrhoea and correct misconceptions.

- **Responsible person:** Nurses, Doctors, HEWs and Religious leaders

- Ministry of Agriculture Water and Land Reform to ensure the water supply at the village and the Village Council to ensure the water supply at informal settlements.

Furthermore, the findings contain helpful information that existing national programmes can use in combating diarrhoea.

### **7.7.2 Perceived causes of diarrhoea, lack of knowledge, and negative attitudes towards the cause, prevention, and practice in terms of prevention and management of acute diarrhoea**

Some cultural practices inherent in the region that is being practised by the Ovambo tribe in all corners of the country must be addressed as a matter of urgency in maternal, newborn, and child health programmes. These programmes need to target the behaviours of child caregivers and the broader social network. Based on the findings

of this study, our results show that traditional beliefs often inform questionable or harmful practices based on spiritual beliefs, popular knowledge, and instruction by authority figures, including elderly community members and health workers. Broader health system interventions are also needed to address the alarming findings of high rates of inappropriate use of medications during diarrhoea episodes and traditional herbs.

In addition, the global health community must measure the prevalence of these practices in standard ways to produce evidence that can be used as a basis for action.

Additionally, the following actions can be taken:

- PHC programmes health promotion programmes related to diseases under under-five need to emphasize the danger signs and create awareness related to harmful practices while managing the diarrhoeal disease.

**Responsible person:** Directorate of Primary Health and policy makers

- Integrate teaching about a wide range of traditional practices into the curriculum for the training of HEWs;

**Responsible person:** Directorate of Primary Health

- The government must collaborate with donor-funding organizations to ensure balance in using indigenous knowledge when introducing methods for preventative care and managing diarrhoeal among children under five in limited-resource settings.

**Responsible person:** Directorate of Primary Health, Non-governmental Organizations

### **7.7.3 Factors that are associated with health-seeking behaviour**

Recommendations were made based on identified factors associated with health-seeking behaviour, such as socio-demographic, cultural, health services, mother or caregiver, biomedical care and physical accessibility and related factors as presented below:

#### **7.7.3.1 Socio-demographic factors**

- Advocate for equity and proper infrastructure in the informal settlement and rural setup.

**Responsible person:** Local government

- Provision of safe water and water purification sachets and toilets improved literacy. Health education on environmental sanitation should be strengthened to be able to decrease childhood diarrhoea. Health service providers should provide regular health education sessions to increase parents' knowledge about diarrhoea and to correct misconceptions. Increase awareness on sanitation as well as provision of toilet facilities.

**Responsible person:** Directorate of Primary Health, Local government and Non-Governmental Organizations

#### *7.7.3.2 Cultural factors*

- In-service training for healthcare workers related to cultural beliefs and practices inherent in the region and how to address such needs must be carried out annually at each healthcare facility in the area for the health workers to be informed.

**Responsible person:** Incharge of the departments

#### *7.7.3.3 Health services*

- Provide suggestion boxes where clients can anonymously give suggestions, air their views and deliver any complaints.

**Responsible person:** In-charge of the departments

- A customer care desk where clients can raise their complaints should be available at each organization

**Responsible person:** In-charge of the departments

- MOHSS should employ more HEWs, nurses, and doctors to alleviate the workload

- These comprise recommendations for health promotion, health education, and continuous in-service training for future research.

**Responsible person:** In-charge of the departments

#### *7.7.3.4 Parents or caregiver-related factors*

Health workers to improve parents' and caregivers' knowledge related to diarrhoeal diseases in children under five. Improving parents'/caregivers' knowledge may, in

turn, lead to well-informed decisions about when and how to seek care for sick children.

Furthermore, it is recommended to improve and expand the health education programme and to educate parents/caregivers and the general public, especially in poor settlements, about the importance of seeking prompt care in managing diarrhoea (and other childhood illnesses). In addition, parents/caregivers need to know what constitutes appropriate healthcare for specific diseases. Therefore, there is an urgent need for intensified health education regarding ORS in diarrhoea management, especially in these poorer settings.

#### *7.7.3.5 Physical accessibility*

- Increase the numbers of HEWs deployed to rural areas to cut travel times and long distances, which hinder service delivery and contribute to delays in an on-time referral of patients.
- Construction of clinics in the villages

**Responsible person:** MoHSS, Local government and Non-Governmental Organizations

- The number of nurses and medical doctors should be increased to attain a quality-of-service provision

**Responsible person:** MoHSS

- Health centres and clinics to function on weekends and public holidays

**Responsible person:** MoHSS

#### *7.7.3.6 Characteristics of the disease*

- Advocate for appropriate health-seeking behaviour; promote appropriate ways of home diarrhoea management and utilization of health facilities in managing diarrhoea, and make people aware of danger signs related to diarrhoeal disease.

**Responsible person:** Nurses, doctors, HEWs, religious leaders and nursery school teachers

#### *7.7.3.7 Traditional beliefs*

- Educate the parents and caregivers to improve their literacy on health-related matters and empower women.

**Responsible person:** Nurses, doctors, HEWs and religious leaders

#### *7.7.3.8 Biomedical care*

- Advocate for community-level meetings to consult and collaborate with stakeholders to discuss aligning traditional and modern practices in prevention strategies to prevent confusion and undermining of local knowledge.

**Responsible person:** Nurses, doctors, HEWs, religious leaders and traditional healers

- To improve the current referral system of patients to ensure that patients reach health facilities on time;

**Responsible person:** Nurses, doctors, HEWs, religious leaders and traditional healers

- Establish a Community Health Committee coordinator via the regional health directorate and regional council to empower the community to take ownership in assisting early reporting and referral.

**Responsible person:** PHC co-ordinators, traditional leaders, church leaders

#### **7.7.4 Recommendations for teaching**

- In-service training related to customer satisfaction.

**Responsible person:** Incharges of the departments

- Continuous in-service training for healthcare workers on customer care and professionalism should be provided.

**Responsible person:** In charge of the departments

- Training curricula to be reviewed to include community perceptions, cultural beliefs, and practices related to the management of diarrhoeal disease

**Responsible person:** MoHSS and Institutions responsible for training nurses

- The education programme should include the identification of the severity of the disease, particularly dehydration. Further, the negligible use of ORS for managing diarrhoea in the study population is worrisome. On the other hand, ORS are highly effective and affordable and is widely recommended and promoted by UNICEF and WHO for managing diarrhoea.

**Responsible person:** MoHSS, PHC co-ordinators and Institutions responsible for training nurses

### 7.7.5 Recommendations for practice

The study revealed that health workers need to put more emphasis on activities related to HSB

- Moreover, in-service education on customer satisfaction needs to be conducted at clinics, HCs, and hospitals.

**Responsible person:** Incharges of the departments

- Provide suggestion boxes where clients can anonymously give suggestions, air their views, and deliver any complaints.

**Responsible person:** Incharges of the departments

- The developed strategies need to be implemented in clinical practice

Responsible person: MoHSS

### 7.7.6 Recommendations for further research

- MoHSS, together with pharmacological companies, research to identify and determine the effectiveness of the locally available herbs used by community members to treat ailments in children under five.
- Scientists need to test the efficacy of all available plants and herbs in managing acute diarrhoea amongst children to preserve the continuation of the use of safe and effective substances.
- Incharges of the departments need to ensure that monthly customer satisfaction surveys are conducted at each clinic and healthcare facility
- There is a need to have collaborative research to preserve traditional knowledge and indigenous skills related to diarrhoeal disease care.

**Responsible person:** MoHSS, training institutions and non-governmental organizations

- Advocate for research collaboration with social science on local traditional practices and western modern care practices.

**Responsible person:** MoHSS and training institutions

- Further studies are also recommended to understand the reasons for the observed low use of ORS to guide further programme interventions.

**Responsible person:** Nurses, doctors and training institutions

## 7.8 WAY FORWARD

On completion of the study, the researcher will disseminate the findings

Furthermore, the following articles derived from the study results are waiting for publication in peer-reviewed journals to increase accessibility:

1. Perceptions of parents'/caregivers' relating to factors contributing to diarrhoeal disease among children under five in the Ohangwena region, Namibia
2. Parents'/caregivers' knowledge of aetiology, prevention, and management of acute diarrhoea among children under five in the Ohangwena region, Namibia
3. Parents'/caregivers' attitude toward the cause, management, and prevention of diarrhoea in children under five in the Ohangwena region, Namibia
4. Parents'/caregivers' HSB related to diarrhoea prevention and management of children under five in Engela district in Ohangwena region, Namibia.
5. Parents'/caregivers' harmful practices related to diarrhoea prevention and management among children under five in the Ohangwena region, Namibia
6. Conceptual framework as a basis for strategies development
7. Strategies for implementation to enhance parents/caregivers' HSB and prevention and management skills about diarrhoea among under-five children in the Ohangwena region

The following published papers are to be envisaged for presentation on national and international academic platforms

- **Bauleth, M. F.,** Mitonga, H. K., & Pinehas, L.N. (2020). Factors associated with the nutritional status of children under-five years of age with diarrhoea in

Ohangwena Region, Namibia. *International Journal of Healthcare*. 2020 May, Vol. 6, No. 2

- **Bauleth, M. F.,** Mitonga, H. K., & Pinehas, L.N. (2020). Epidemiology and factors associated with diarrhoea among under-five-year-old children in the Engela District in the Ohangwena Region, Namibia. *African Journal of Primary Healthcare & Family Medicine*

Furthermore, it is envisaged that this dissertation will be converted into a book containing the following chapters

Chapter one: Background of children diagnosed with diarrhoea and parents' health-seeking behaviour

Chapter two: Epidemiology and factors associated with diarrhoea prevalence

Chapter three: Parents/caregivers' perceptions related to causes of diarrhoea and causes of diarrhoea related among children under five years

Chapter four: Parents/caregivers' knowledge, attitudes and practices related to acute diarrhoea diseases among children under five years

Chapter five Strategies for implementation to enhance parents/caregivers' HSB and prevention and management skills about diarrhoea among under-five children

## 7.9 SUMMARY

This chapter describes the purpose and conclusions of the study. The findings were discussed based on the six objectives of the study, as shown above. Furthermore, the chapter further discussed the study limitations that were encountered. However, the study made a significant contribution to the body of knowledge—the main contribution includes developing the conceptual framework for health promotion and strategies for HSB. Furthermore, the recommendations were made based on the findings from this study. The recommendation was related to diarrhoea prevalence, the parent or caregivers' perceptions of causes of diarrhoeal disease, parents' knowledge, attitudes and practices, and parents' and caregivers' HSB. In addition, further research was recommended. Therefore, the researcher is confident that implementing the health promotion and HSB strategies will reduce diarrhoea prevalence and enhance appropriate health-seeking in the Ohangwena Region.

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## ANNEXURE A: ETHICAL CLEARANCE CERTIFICATE FROM UNAM



### ETHICAL CLEARANCE CERTIFICATE

Ethical Clearance Reference Number: SON/553/2019

Date: 13 December, 2019

This Ethical Clearance Certificate is issued by the University of Namibia Research Ethics Committee (UREC) in accordance with the University of Namibia's Research Ethics Policy and Guidelines. Ethical approval is given in respect of undertakings contained in the Research Project outlined below. This Certificate is issued on the recommendations of the ethical evaluation done by the Faculty/Centre/Campus Research & Publications Committee sitting with the Postgraduate Studies Committee.

Title of Project: Strategies For Health Care Providers To Enhance Appropriate Health Seeking Behaviour For Acute Diarrhoea Of Under Five Years Among Mothers And Caregivers In The Ohangwena Region, Namibia

Researcher: BAULETH MARIA FRANCINETH

Student Number: 8704430

Supervisor(s): *Dr. Kabwebwe Mitonga Honoré (Main) Dr. Lusía N. Pinehas (Co)*

Faculty: School of Nursing

Take note of the following:

- (a) Any significant changes in the conditions or undertakings outlined in the approved Proposal must be communicated to the UREC. An application to make amendments may be necessary.
- (b) Any breaches of ethical undertakings or practices that have an impact on ethical conduct of the research must be reported to the UREC.
- (c) The Principal Researcher must report issues of ethical compliance to the UREC (through the Chairperson of the Faculty/Centre/Campus Research & Publications Committee) at the end of the Project or as may be requested by UREC.
- (d) The UREC retains the right to:
  - (i) Withdraw or amend this Ethical Clearance if any unethical practices (as outlined in the Research Ethics Policy) have been detected or suspected,
  - (ii) Request for an ethical compliance report at any point during the course of the research.

UREC wishes you the best in your research.

Dr. J.E. de Villiers: Chairperson

A handwritten signature in black ink, appearing to be 'J.E. de Villiers', written over a horizontal line.

Ms. P. Claassen: Secretary

A handwritten signature in black ink, appearing to be 'P. Claassen', written over a horizontal line.

## ANNEXURE B: PERMISSION LETTER FROM THE UNIVERSITY OF NAMIBIA

CENTRE FOR POSTGRADUATE STUDIES

University of Namibia, Private Bag 13301, Windhoek, Namibia  
340 Mandume Ndemufayo Avenue, Pioneer Park  
☎ +264 61 206 3275/4562; Fax +264 61 206 3290; URL: <http://www.unam.edu.na>



### RESEARCH PERMISSION LETTER

**Student Name:** M Bauleth

**Student number:** 8704430

**Programme:** PHD Public Health

**Approved research title:** Strategies for health care providers to enhance appropriate health seeking behaviour for acute diarrhoea of under five years among mothers' and caregivers in the Oshana region, Namibia.

#### TO WHOM IT MAY CONCERN

I hereby confirm that the above mentioned student is registered at the University of Namibia for the programme indicated. The proposed study met all the requirements as stipulated in the University guidelines and has been approved by the relevant committees.

The proposal adheres to ethical principles as per attached Ethical Clearance Certificate. Permission is hereby granted to carry out the research as described in the approved proposal.

Best Regards

  
-----

**Name:** Dr Marius Hedimbi

**Director:** Centre for Postgraduate Studies

**Tel:** +264 61 2063275

**E-mail:** [dircetorpgs@unam.na](mailto:dircetorpgs@unam.na)

13 Dec 17

Date

**ANNEXURE C: PERMISSION FROM THE MINISTRY OF HEALTH AND SOCIAL SERVICES**



**REPUBLIC OF NAMIBIA**

*Ministry of Health and Social Services*

Private Bag 13198  
Windhoek  
Namibia

Ministerial Building  
Harvey Street  
Windhoek

Tel: 061 – 203 2537  
Fax: 061 – 222558  
E-mail: btjivambi@mhss.gov.na

**OFFICE OF THE PERMANENT SECRETARY**

Ref: 17/3/3 BF

Enquiries: Mr. B. Tjivambi

Date: 16 July, 2018

Ms. Bauleth M. Francineth  
PO Box 2280  
Oshakati  
Namibia

Dear Ms. Francineth

*Re: Strategies for health care providers to enhance effective health seeking behaviour among mothers, children and caregivers for acute diarrhoea in children under five in the Ohangwena region, Namibia*

1. Reference is made to your application to conduct the above-mentioned study.
2. The proposal has been evaluated and found to have merit.
3. **Kindly be informed that permission to conduct the study has been granted under the following conditions:**
  - 3.1 The data to be collected must only be used for academic purpose;
  - 3.2 No other data should be collected other than the data stated in the proposal;
  - 3.3 Stipulated ethical considerations in the protocol related to the protection of Human Subjects should be observed and adhered to, any violation thereof will lead to termination of the study at any stage;

- 3.4 A quarterly report to be submitted to the Ministry's Research Unit;
- 3.5 Preliminary findings to be submitted upon completion of the study;
- 3.6 Final report to be submitted upon completion of the study;
- 3.7 Separate permission should be sought from the Ministry for the publication of the findings.

Yours sincerely,

  
Ms. Petronella Masaba  
Acting Permanent Secretary



*"Health for All"*

**ANNEXURE D: PERMISSION LETTER FROM THE REGIONAL DIRECTOR  
OF OHANGWENA REGION**



REPUBLIC OF NAMIBIA

9 - 0 / 0001

**MINISTRY OF HEALTH AND SOCIAL SERVICE  
OHANGWENA REGIONAL DIRECTORATE**

Private Bag 88006 Eenhana Namibia REGIONAL MANAGEMENT TEAM EENHANA  
Tel: 065 - 263239 Fax: 065 - 263225 E-mail: opetuhango6006@gmail.com

**OFFICE OF THE REGIONAL DIRECTOR**

Enq. John N. Hango

29 November 2018

To: Ms. Maria F. Bauleth  
Doctor Degree in Public Health Student  
OSHAKATI

**Re: Request for permission to conduct a Doctoral Degree in Public Health in  
Ohangwena Region**

1. Your letter dated 28 November bears reference
2. Ohangwena Health Directorate is pleased to inform you that permission to conduct your studies in our health facilities has been granted.
3. Please note also that Engela district Management is also informed of this activity.
4. You are expected to report to the Senior Medical Officer when you come to commence with your study.
5. Take also note that before the community is visited, the gatekeepers must be visited first. It is Regional Councilors and traditional leaders and others.
6. We wish you success in pursuing this massive task.

Regards

  
John N. Hango  
Regional Director



*Your Health Our Concern*

## ANNEXURE E: MOTHER/CAREGIVERS QUESTIONNAIRE

QUESTIONNAIRE SERIAL

NO \_\_\_\_\_

DATE \_\_\_\_\_

### QUESTIONNAIRE FOR MOTHER AND CAREGIVER OF UNDER 5 YEARS CHILDREN

IDENTIFICATION
Name of Village _____
Place (locality) name _____

Residence:

1.Urban		2.Rural	
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### SECTION A

#### Socio-demographic characteristics of Mother/Caregiver and the under-five

1.1 Language of respondent

1.Oshiwambo		2.English	
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Other specify-----

1.2 Gender:

1.Male		2.female	
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1.3 Age of caregiver: (Actual age e.g. 30, 40, 56 etc.) \_\_\_\_\_

1.4 Marital status:

1/Single		2/ Married		3/Co-habiting (living together)		4/Divorced/separated		5/Widowed	
----------	--	------------	--	---------------------------------	--	----------------------	--	-----------	--

1.5 Religion:

1/Protestant/ELCIN		2/Catholic		3/Anglican		4/Muslim	
--------------------	--	------------	--	------------	--	----------	--

5/ Other (specify) \_\_\_\_\_

1.6 Ethnicity:

1/ Kwanyama		2/ Ndonga		3/Kwambi	
-------------	--	-----------	--	----------	--

4/ Other (specify) \_\_\_\_\_

1.7 Nationality	Yes	No
Namibian		
Angolan		
Zambian		

Other (specify).....

1.8 Mother/caretaker employment status:

1/Unemployed/Jobless		2/Employed		3/ Self employed		4/Farmer	
----------------------	--	------------	--	------------------	--	----------	--

5/ Other (specify) \_\_\_\_\_

1.9 Father employment status:

1/Unemployed/Jobless		2/Employed		3/Self employed		4/Farmer	
----------------------	--	------------	--	-----------------	--	----------	--

5/ Other (specify) \_\_\_\_\_

1.10 Educational level of caretaker:

1/Not Educated		2/Primary education		3/ Secondary education		4/Higher education	
----------------	--	---------------------	--	------------------------	--	--------------------	--

1.11 Estimated monthly income per house hold in Namibian dollars:

(Specify)\_\_\_\_\_

1.12 Number of people living in the household

(Specify)\_\_\_\_\_

1.13 Please give the number, age and sex of under-five year children who usually live in your house hold

No.	2/ age	3/sex		Height	weight	Weight for height	Suffering for diarrhea in the past two weeks	
		M	F				1/Yes	2/No
1								
2								
3								
4.								
5								

1.14 Children who usually live in your house hold Immunization complete

No.	(Tick in the appropriate space for complete immunization)								Immunizations up to date	
	1/Yes		2/No		1/Yes		2/No			
1	Birth: BC GO PV 0	6weeks: OPV1, Penta1, Rota1, Pneumo1	10 weeks: OPV2, Penta2, Rota2, Pneumo2	14weeks: OPV3, Penta3, Rota3, Pneumo3	9months measles	18 months: Measles Mumps Rubella				
2	Birth: BC GO PV	6weeks: OPV1, Penta1, Rota1, Pneumo1	10 weeks: OPV2, Penta2, Rota2, Pneumo2	14weeks: OPV3, Penta3, Rota3	9months measles	18 months: Measles Mumps Rubella				
3	Birth: BC GO PV	6weeks: OPV1, Penta1, Rota1, Pneumo1	10 weeks: OPV2, Penta2, Rota2, Pneumo2	14weeks: OPV3, Penta3, Rota3	9months measles	18 months: Measles Mumps Rubella				
4.	Birth: BC GO PV	6weeks: OPV1, Penta1, Rota1, Pneumo1	10 weeks: OPV2, Penta2, Rota2, Pneumo2	14weeks: OPV3, Penta3, Rota3	9months measles	18 months: Measles Mumps Rubella				
5	Birth: BC GO PV	6weeks: OPV1, Penta1, Rota1, Pneumo1	10 weeks: OPV2, Penta2, Rota2, Pneumo2	14weeks: OPV3, Penta3, Rota3	9months measles	18 months: Measles Mumps Rubella				

## Section B

### 2. House hold characteristics

2.1 What is the main source of drinking water for member of your house hold?

Choose appropriate item (indicate yes/no and tick in the appropriate column)	1/Yes	2/No
<b>2.1.1 Piped water</b>		
1/Piped into dwelling		
2/Piped to yard/plot		
3/Public tap/stand pipe		
<b>2.1.2 Tube well or borehole</b>		
<b>2.1.3 Dug well</b>		
Protected well		
Unprotected well		
<b>2.1.4 Water from Spring</b>		
1/Protected well		
2/Unprotected well		
<b>2.1.5 Rain water</b>		
<b>2.1.6 Tank truck</b>		
<b>2.1.7 Surface water</b>		
1/River/Dam/Lake		
2/Pond/stream/Canal/irrigation channel		
<b>2.1.8 Bottled water</b>		

2.1.9 Other specify: \_\_\_\_\_

2.2 If water source is located elsewhere rate the distance to source of water (**tick in the provided space**)

1/Faraway		Nearby	
-----------	--	--------	--

2.3 Indicate time(**minutes**): \_\_\_\_\_

2.4 What kind of toilet facility do member of your household usually use?(**tick in the appropriate column**)

<b>2.4.1 Flush or pour flush toilet flushed to piped sewer system</b>	1/Yes	2/No
1/ flush to septic tank		
2/flush to pit latrine		
3/flush to somewhere else		
4/flush don't know where		
<b>2.4.2 Pit latrine</b>	1/Yes	2/No
1/Ventilated improved latrine		
2/Pit latrine with slab		
3/Pit latrine without slab/open pit		
<b>2.4.3 Composting toilet</b>		
<b>2.4.4 Bucket toilet</b>		
<b>2.4.5 Hanging toilet/Hanging latrine</b>		
<b>2.4.6 No facility/Bush/Field</b>		

2.4.7 Other specify \_\_\_\_\_

2.5 Do share this toilet facility with other households

1/Yes		2/No	
-------	--	------	--

2.6 How many households use this toilet facility? (**tick in the appropriate column**)

1/ Less than 10	
2/ More than 10	
3/ Don't know	

2.7 What are the main material of the floor?

<b>2.7.1 Natural floor</b>	1/Yes	2/No
1/ Earth/sand		
2/Dung		
3/Mud/clay		
<b>2.7.2 Finished floor</b>	1/Yes	2/No
1/Parquet or polished wood		
2/Vinyl or asphalt strips		
3/Ceramic tiles		
4/ Cement carpet		

5/ Other specify.....

2.8 Main material of the exterior walls?

<b>2.8.1 Natural walls</b>	1/Yes	2/No
1/ No wall		

2/Cane/palm/trunks		
3/Dirt		
<b>2.8.2 Rudimentary walls</b>	1/Yes	2/No
1/Bamboo with mud/clay/dung		
2/Sticks with mud/clay/dung		
3/Stone with mud		
4/ Uncovered adobe		
5/Plywood		
6/Cardboard		
7/reused wood		
<b>2.8.3 Finished walls</b>	1/Yes	2/No
1/Cement		
2/Stone with lime/cement		
3/Bricks		
4/Cement blocks/cement stones		
5/Covered adobe		
6/Wood planks/shingles		
7/Corrugated iron/zinc		
8/Tin		

9/Other Specify \_\_\_\_\_

2.9 Main material of the roof?

<b>2.9.1 Natural roofing</b>	1/Yes	2/No
1/ No roof		
2/thatched/palm leaf/grass		
3/Sod		
<b>2.9.2 Rudimentary roofing</b>	1/Yes	2/No
1/Rust mat		
2/Palm/bamboo		
3/Wood planks		
4/ Cement carpet		
5/Cardboard		
6/Sticks with mud and dung		
7/Plastic/PVC		
<b>2.9.3 Finished roofing</b>	1/Yes	2/No
1/Corrugated iron sheet		
2/Wood		
3/Calamine/cement fiber		
4/Ceramic/brick tiles		
5/Cement		
6/Roofing shingles		
7/Tin		
8/Asbestos sheet		
9/Slate		

10/ Other Specify \_\_\_\_\_

2.10 Rooms used for sleeping

1/ One		2/ Two		3/three		4/Other specify: _____
--------	--	--------	--	---------	--	------------------------

**Assets owned by household or member of the household**

2.11 Does your household have:	1/Yes	2/No
Electricity		
A radio		
A television		
A cell phone		
A landline/Telephone		
A refrigerator/freezer		
Washing machine		
Cooker		
Computer		
Internet at home		
Watch/clock		
Tractor		
Bicycle		
Motorbike		
An animal-drawn cart		
A car or truck		
Boat with motor		
Agricultural land		

**Section C**

**Aspects related to diarrhea and health seeking**

1. 3.1 Has any of the under-five year children (mentioned above) who usually live in your household suffered from diarrhea in the past 2 weeks	1/Yes		2/No	
------------------------------------------------------------------------------------------------------------------------------------------------	-------	--	------	--

**NB! If answer to question 3.1 is yes proceed with 3.2 if no go to question 3.10**

3.2 What is your relationship with the child?

1/Father	2/ Mother	3/Grandmother	4/Sister/brother	5/Aunty	
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6/Others (Specify): \_\_\_\_\_

3.3 Indicate how many times was your child affected by diarrhea in the last two weeks?

1/ One time	2/ Two times	3/ Three times	4/Other specify _____
-------------	--------------	----------------	-----------------------

3.4 During the illness does the under-five year child have any of the following signs and symptoms (**can tick more than one statement if applicable**)

Statement	Child 1		Child 2		Child 3		Child 4		Child 5	
	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
1/Fever										
2/Cannot eat or drink										
3/Repeated vomiting										

4/Blood in the stool										
5/Refuse to eat/drink										
6/Sunken eyes										
7/Very thirsty										

3.5 Indicate duration of diarrhea before seeking help	<b>1/Yes</b>	<b>2/No</b>
Help sought within the first and second day		
Help sought in the 3rd day		
Help sought after more than 3 days		

If different from other child with diarrhea indicate here: \_\_\_\_\_

3.6 Classify the type of diarrhea the under-five year children who usually live in your house hold suffered from diarrhea in the past 2weeks

<b>Number representing each child</b>	<b>1/Acute Diarrhea</b> (Lasts less 5 to 7 days)	<b>2/Persistent diarrhea</b> (Lasts more than 7 days but less than 14 days)	<b>3/Chronic diarrhea</b> (Lasts more than 14 days)	<b>4/Diarrhea with blood/Dysentery</b>
1.				
2.				
3.				
4.				
5.				

3.7 For the above case of diarrhea how did you seek help?	<b>1/Yes</b>	<b>2/No</b>
Treated at home only		
Treated first at home than taken to hospital		
Taken to Hospital/clinic		
The mother went for “okutetwa eemalo” cutting at the perennial area		
The father went for “okutetwa eemalo” cutting perennial area		
Both mother and father went for okutetwa eemalo” cutting perennial area		
Take the baby to a traditional healer		
Take the baby to a priest for prayers		
Nor treatment was given		

Other specify: \_\_\_\_\_

3.8 If you did not seek help at the clinic/hospital what was the reason?	<b>1/Yes</b>	<b>2/No</b>
1/Clinic too far from house		
2/Unable to find transport		
3/Cost for travel too high		
4/Cost for treatment too high		
5/Other children at home who could not be left alone		
6/Other specify _____		

3.9 For the above case of diarrhea if treated at home what did you give?	1/Yes	2/No
1/Gave homemade solutions		
2/Give ORS at home		
3/Salt sugar solution		
4/Increased fluids		
5/ Other specify.....		

3.10 What was the first thing you did the last time when your child had acute diarrhea?	1/Yes	2/No	Correct answer
1/Give home remedies (traditional)			NO
2/Give plenty of fluid and ORS at home			YES
3/Went for faith healing			NO
4/Went to traditional healer “okutetwa eemhalo/oshipa”			NO
5/Went to hospital/clinic			YES
6/Did not do anything			NO
7/Other specify_____			

3.11 How do you classify the respondent in terms of health seeking behavior? (NB! researcher to classify)

1/Appropriate		2/Non-appropriate	
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**Definition of appropriate seeking behavior:** Is when care is sought promptly within 24 hours from skilled health care provider after recognizing acute diarrhea as well as use of Oral Rehydration Salts (ORS) solution or any other solution recommended, and does not consult traditional healer or spiritual healer in the management of diarrhea.

#### SECTION D 4. (Knowledge, attitudes, Practice)

##### Knowledge for acute Diarrhea

Knowledge Score

Write **X** for the answer you choose for respective questions

4.1.1 What is acute diarrhea?	True	False	Correct answer
1/Passing stools with blood			<b>F</b>
2/Passing of three or more loose or liquid stool per day for less than 5 to 7 days			<b>T</b>
3/Passing of loose stools or liquid for more than 14			<b>F</b>
4/Passing of loose/liquid that lasts more than 7 days but less than 14 days			<b>F</b>
5/Don't know			<b>F</b>

4.1.2 What causes/contribute to diarrhea? (Indicate true or false)	True	false	Correct answer
<b>Infection</b>			
1/Bacterial			<b>T</b>
2/Viral and parasitic organisms			<b>T</b>
3/Mother or father could have a problem			<b>F</b>
<b>Malnutrition</b>			
1/Malnutrition makes children more vulnerable to diarrhea			<b>T</b>
2/Diarrhea is the leading cause of malnutrition			<b>T</b>
3/Malnutrition is caused by mother with multiple partners			<b>F</b>
4/I don't know			
<b>Source</b>			
1/Unhygienic fecal disposal			<b>T</b>
2/Fly			<b>T</b>
3/Water Contaminated water with feces			<b>T</b>
4/Unclean house environment			<b>T</b>
<b>Other causes</b>			
1/From person to person			<b>T</b>
2/ Inappropriate storage of cooked food			<b>T</b>
3/Not washing hands before eating or breast feeding			<b>T</b>
4/Using infant feeding bottles			<b>T</b>

4.1.3 How is diarrhea treated at home?	True	False	Correct answer
1/Give extra fluids			<b>T</b>
2/Give antidiarrheal medicine			<b>F</b>
3/Stop breastfeeding or feeding the child			<b>F</b>
4/If the child is exclusive breastfed, give ORS or clean water in addition to breast milk			<b>T</b>
5/If child not exclusive breastfed give food-based fluids such as(soup, salted rice water, salted yoghurt or clean water)			<b>T</b>
6/Give salt and sugar water solution			<b>T</b>
7/Give fruit juice or sweetened tee or cool drink			<b>F</b>

4.1.4 How much drink should be given to a child with diarrhea?	True	False	Correct answer
1/More than usual			<b>T</b>
2/About the same			<b>F</b>
3/Less than Usual			<b>F</b>

4.1.5 How can diarrhea be prevented in under-five children?	True	False	Correct answer
1/Remain faithful to your partner			<b>F</b>
2/Immunization			<b>T</b>
3/Hand washing with soap			<b>T</b>
4/Parents should go for perineal cutting			<b>F</b>

5/Food hygiene.			<b>T</b>
6/Proper disposal of child feces			<b>T</b>
7/Through prayers			<b>F</b>

4.1.6 Which signs indicate that a child needs to be taken to the nearest Health Facility?	True	False	Correct answer
1/diarrhea within one day			<b>F</b>
2/Is eating or drinking poorly			<b>T</b>
3/becomes very thirsty			<b>T</b>
4/Starts to passes many watery stools			<b>T</b>
5/Has repeated vomiting			<b>T</b>
6/Develops fever			<b>T</b>
7/Has blood in the stool			<b>T</b>
8/Child not getting better in three days			<b>T</b>

4.1.7 What are the benefits of ORS	True	False	Correct answer
1/Treat diarrhea			<b>T</b>
2/Prevent dryness of body caused by diarrhea			<b>T</b>
3/Fluid replacement			<b>T</b>
4/Prevent further complications			<b>T</b>
5/Has nor benefits			<b>F</b>

#### 4.2 Attitude questions

Indicate your answer by placing a cross (X) in the relevant box to question that corresponds with your personal feelings about the attitude presented.

No.	Attitude	Agree	Strongly agree	Disagree	Strongly disagree
1.	Diarrhea is caused by witchcraft and evil eye			✓	✓
2.	Diarrhea can be prevented through immunization/vaccination	✓	✓		
3.	Maternal and parental related factors(eemhalo) can contribute to a child develop diarrhea			✓	✓
4.	Diarrhea attacks mostly bottle-fed children	✓	✓		
5.	Prayers are powerful can cure child with diarrhea			✓	✓
6.	Teething causes diarrhea			✓	✓
7.	Hand washing with soap prevents diarrhea	✓	✓		

8.	Diarrhea is a problem in the community	√	√		
9.	Chronic diarrhea in children is not treated with western medicine			√	√
10.	Hand washing should be done only when enough water is available			√	√
11.	Child's/infant feces are not hazardous to health			√	√
12.	It is important to continue breastfeeding when a child has diarrhea	√	√		
13.	Human feces are a source of diarrhea	√	√		
14.	Breastfeeding when pregnant causes diarrhea			√	√
15.	Liquid food aggravates diarrhea			√	√

### 4.3 Practices questions

Practice scores

Indicate your answers by placing a cross (X) in the relevant box to the question that corresponds with your personal feelings about the practices presented

			Correct answer
4.3.1 Have you ever undergone perineal cutting for the purpose of treatment for your child that is suffering from diarrhea?	1/Yes	2/No	No

4.3.2 If yes how many times?\_\_\_\_\_

4.3.3 Have you have taken your child that is suffering from diarrhea for prayers as part of treatment of diarrhoea?	1/Yes	2/No	No
---------------------------------------------------------------------------------------------------------------------	-------	------	----

4.3.4 If yes how many times?:\_\_\_\_\_

4.3.5 When is it required to take your child to the health facility from onset of diarrhea?	Yes	No	Correct answer
1/Less than one day onset			NO
2/Within one days of onset			YES
3/More than one day of onset			NO
4/Other specify_____			

4.3.6 If the child has persistent diarrhea what should the mother do?	Yes	No	Correct answer
1/Give ORS at home			<b>YES</b>
2/Taken to Hospital/clinic			<b>YES</b>
3/Go for cutting at the perennial area			<b>NO</b>
4/The father goes for cutting at the perennial area			<b>NO</b>
5/Take the baby to a traditional healer			<b>NO</b>
6/Take the baby to a priest for prayers			<b>NO</b>
7/Other specify:			

4.3.7 What do you use for hand washing?	Yes	No	Correct answer
1/Water only			<b>NO</b>
2/Water and soap			<b>YES</b>
3/Other specify: _____			

4.3.8 When do you practice hand washing?	Yes	No	Correct answer
1/When hands are dirty only			<b>NO</b>
2/After using a toilet			<b>YES</b>
3/After attending to a child that has defecated			<b>YES</b>
4/Before handling food			<b>YES</b>
5/Only when water is available			<b>NO</b>
4/Before feeding a child			<b>YES</b>
5/Other specify:.....			

4.3.9 What do you usually do to make the water safer to drink?	Yes	No	Correct answer
1/ Boil			<b>YES</b>
2/ Add bleach/chlorine			<b>YES</b>
3/ Strain through a cloth			<b>YES</b>
4/ Use water filler ceramic/sand/ composite etc.			<b>YES</b>
5/ Nothing			<b>NO</b>
Other specify:_____			

4.3.10 How frequent do you bath your child?	Yes	No	Correct answer
1/Daily			<b>YES</b>
2/Two times weekly			<b>NO</b>
3/Only when the child looks dirty			<b>NO</b>
4/Other specify:_____			

4.11.8 How do you store left over food?	Yes	No	Correct answer
1/ Fridge			<b>YES</b>
2/ Left in covered pot			<b>YES</b>
3/ Left in uncovered pot			<b>NO</b>
4/Other specify:_____			

## ANNEXURE F: PARTICIPANTS FROM HOUSEHOLD CONSENT FORM

To: Mothers/care givers of children under the age of 5 years Ohangwena Region

### CONSENT TO PARTICIPATE IN RESEARCH PROJECT

Dear Participants

I am Maria Francineth Bauleth registered with University of Namibia doing Doctor of Philosophy in Public health. I wish to conduct a research project entitled: "Strategies for health care providers to enhance health seeking behaviour for acute diarrhea of under five years among mothers' and caregivers in the Ohangwena Region, Namibia". The will be conducted under the guidance of: Prof. Kabwebwe Mitonga Honoré 0816291762 and Dr. Lucia Pinehas 0812358250, school of Nursing and Public Health University of Namibia.

The purpose of the study is to investigate the health seeking of mothers and caregivers of under-five children with regard to acute diarrhea, in order to develop strategies to enhance appropriate health seeking behaviour.

With your permission, you are expected to fill in the questionnaire, with questions related to your knowledge believes and practices related to health care seeking practices of acute diarrhea. It will take approximately 15-20 minutes to complete the questionnaire. After completing the questionnaire you are expected to hand it back to the researcher since she will be available in order to clarify any questions that are not clear to the respondent. The questionnaires will be destroyed after the study is completed. The researcher will share the information provided with the supervisors. Your inputs in this research will be highly appreciated.

Anonymity and confidentiality and will be ensured since questionnaire does not require you to enter your name or address, therefore the information will not be linked to you. Participation in this study it is voluntary, you have the right to refuse to take part or to withdraw from the study anytime should you feel so, without any penalty.

The study will provide a better understanding on health seeking behaviour for acute diarrhea among mothers' and caregivers of under five children. Findings from this study will be used as a basis for development of guideline for MOHSS health care providers of which you will be invited to attend if you are willing.

Should you agree to participate, please sign the consent provided. In case if you have any questions and concerns about the research, please feel free to contact me: cell 0811285934 or E-mail [mbauleth@unam.na](mailto:mbauleth@unam.na). Or contact my supervisors Prof. Kabwebwe Mitonga Honoré 0816291762 and: Dr. Lucia Pinehas 0812358250

I.....have understood the purpose and objectives of this as it is fully explained to me and I have agreed to participate in this research project on my own will.

.....  
Participant signature

.....  
Date

.....  
Researcher signature

.....  
Date

## **ANNEXURE G: FOCUS GROUP DISCUSSION GUIDE FOR MOTHERS/CARE GIVERS**

Dear participants,

Thanks for agreeing to participate in the focus group discussion. I am very much interested to hear your valuable opinion related to your experiences regarding the health seeking practices of mothers with children that a suffering from diarrhea

My name is Maria Francineth Bauleth, a PHD registered student at the University of Namibia. I will be facilitating the focus group discussion.

The Purpose of the focus group discussion is to determine your perception related to health seeking behaviours among mothers/caregivers of children under five years old.

### **Ground rules:**

- Everyone should participate.
- Information provided in the focus group must be kept confidential and what is said in this room stays here.
- You will remain anonymous, however, you will be identified as P1, P2, and P3 during the discussion
- There are no right or wrong answers
- Every opinions and person's experiences are important.
- Speak up whether you agree or disagree.
- Furthermore, I am going to tape record the group discussion because I would like to capture everything you have to say.

**Main question:** *What are your perceptions related to factors contributing to diarrhoea prevalence in your area of living/village?*

### **Probing questions:**

- What are the main child health problems in your community?
- Do many under five children die in this are?
- What do they die from?
- What causes diarrhea and what are the symptoms?
- When your child had diarrhea in the past two weeks prior to the survey what should have you done?
- For child diarrhoea do you use traditional medicine home remedies? If yes what for?
- Does your family use traditional healer or spiritual healer for diarrhea management?
- What other sources are used for under five diarrhea management (ask whether they use it and what for)
- What cultural beliefs influence diarrhea management and treatment seeking in your community?
- Have you gone for perineal cutting as part of management of your child suffering from about diarrhea?
- What measures should be taken to improve the community's knowledge about diarrhea?
- What are the main challenges your family faces in going to clinics or hospital?
- What are the reasons that some families do not take their children for treatment at clinic/hospital?
- Does cost or distance make accessing the clinic/hospital difficult?
- What are the solutions to these challenges/barriers?

- What can be done to improve the health of children in this area?

## **ANNEXURE H: INTERVIEW GUIDE FOR HEALTH WORKERS, TRADITIONAL HEALERS AND PRIESTS**

### **Annex IV: In-depth interviews guide for health workers, priest and traditional healer**

**Main question:** Tell me your lived experiences regarding the health seeking behaviours of mothers with children that a suffering from diarrhea”.

## **ANNEXURE I: FOCUS GROUP DISCUSSION GUIDE FOR HEALTH EXTENSION WORKERS**

### **Annex III Focus Group discussion guide with HEW**

**Main question:** Tell me your lived experiences regarding the health seeking practices of mothers with children that a suffering from diarrhea”.

#### **Probing questions:**

1. What are the main child health problems in your community?
2. Do many under five children die in this are?
3. What do they die from?
4. What causes diarrhea and what are the symptoms?
5. For diarrhea amongst under five do you use traditional medicine home remedies? If yes what for?
6. Does your family use traditional healer or spiritual healer for diarrhea among under five children?
7. What other sources are used to treat diarrhea among under five children. (ask whether they use it and what for)
8. Do you use perineal cutting for diarrhea management?
9. What cultural beliefs influence child illness and treatment seeking in your community?
10. What measures should be taken to improve the community’s knowledge about diarrhea?
11. What are the main challenges families faces in going to clinics or hospital?
12. What are the reasons that some families do not take their children for treatment at clinic/hospital?
13. Does cost or distance make accessing the clinic/hospital difficult?
14. What are the solutions to these challenges/barriers?
15. What can be done to improve the health of children in this area?

## **ANNEXURE J: FOCUS GROUP DISCUSSION & INTERVIEWS CONSENT FORM**

### **CONSENT TO PARTICIPATE IN RESEARCH INTERVIEWS**

#### **PROCEDURES**

If you volunteer to participate in this study, feel free and answer all the questions, ask me to repeat the question where you don't understand.

Dear Participants

I am Maria Francineth Bauleth registered with University of Namibia doing Doctor of Philosophy in Public Health. I wish to conduct a research project entitled: "Strategies for health care providers to enhance health seeking behaviour for acute diarrhea of under five years among mothers' and caregivers in the Ohangwena Region, Namibia". The study will be conducted under the guidance of Dr. Kabwebwe Mitonga Honore cell: 0816291762 and: Dr. Lucia Pinehas 0812358250, School of Public Health and Nursing and University of Namibia.

#### **PURPOSE OF THE STUDY**

The purpose of the study is to investigate the health seeking of mothers and caregivers of under-five children with regard to acute diarrhea, in order to develop strategies to enhance appropriate health seeking behaviour.

Interview will take place here at the hospital/clinic in one of the consulting rooms and you will be interviewed one by one (for nurses and Doctors) or in a group (for HEW). During the interview you will describe your experience related health seeking practices of mothers and caregiver whose child is diagnosed with acute diarrhea in Engela District. The interview will take about 30-40 minutes to complete.

#### **POTENTIAL RISKS AND DISCOMFORTS**

There are no risks associated with the interview schedule. The session will be taped to ensure trustworthiness, which in turn might cause certain level of discomfort. You are rest assured that confidentiality will always be maintained.

#### **POTENTIAL BENEFITS TO SUBJECTS AND TO SOCIETY**

The study will provide a better understanding on health seeking behaviour for acute diarrhea among mothers' and caregivers of under five children. Findings from this study will be used as a basis for strategies development for MOHSS that will be beneficiary to enhance appropriate health care seeking amongst care givers in the Ohangwena Region.

#### **PAYMENT FOR PARTICIPATION**

There will be no reimbursement for participation, but the information you provide will benefit all health workers in the Region, since it will enable the researcher to come up with strategies to remedy the situation. Decision makers will as well learn more about health seeking behaviour at the hospital/clinics and in the community.

## CONFIDENTIALITY

Any information that is obtained in connection with this study and that can be identified with you will remain confidential and will be disclosed only with your permission or as required by law. Confidentiality will be maintained as no name or address will be required from you, therefore the information will not be linked to you. Data will be kept in computer and memory stick with a password. The interview/group discussions will be conducted in a private room so that no one can hear the conversation except the researcher. The researcher and the supervisor are the only people that will have access to the data collected. The findings of the research study will be used to develop strategies to enhance appropriate health seeking behaviour for acute diarrhea of under five years, without identifying you by name and with the permission granted by the Ministry of Health and Social Services. Data will be audio-taped and only the researcher will be allowed to review and edit the recorded tape. After data analysis the data in the tape will be erased.

## PARTICIPATION AND WITHDRAWAL

Participation is voluntary, you have the right to refuse to take part or to withdraw from the study anytime should you feel so without consequences of any kind. You may also refuse to answer any questions you don't want to answer and still remain in the study. The investigator may withdraw you from this research if circumstances arise which warrant doing so.

## IDENTIFICATION OF RESEARCH SUBJECT

In case if you have any questions and concerns about the research, please feel free to contact me: cell 0811285934 or E-mail [mbauleth@unam.na](mailto:mbauleth@unam.na). Or contact my supervisors Dr. Kabwebwe Mitonga Honore cell: 0816291762 and: Dr. Lucia Pinehas 0812358250. Should you agree to participate, please sign the consent provided.

I.....have understood the purpose and objectives of this as it is fully explained to me and I have agreed to participate in this research project on my own will.

.....  
.....

Participant signature

Researcher signature

Date

## ANNEXURE K: FEEDBACK REPORTS FROM THE EXPERTS

### EXPERT NO: 1

Clarity of the strategies “ Do you think the strategies are easy to understand?

- Yes strategies are clear and easily understood

Are the strategic objectives achievable?

- Researcher to agree whether the use of performance indicators vs critical success factors was finalised following consensus with critical role players. Other than that the strategies are achievable,

Are the strategic objectives practical?

- Strategies are user-friendly and could be implemented without many changes

The generality of strategies

- Strategies are described in detail. It could be replicated to other gastrointestinal disorders and specifically diseases linked to children under the age of 5 years.

Can these strategies be applied in other situations?

See comment above

Accessibility of strategies

- Its accessibility depends on the envisaged dissemination plan of the researcher.

Do you think the strategies are very important and significant for public health?

- The strategies are significant to circumvent potential public health issues among children and subsequently reducing mortality among the same target group.

Clinical significance and usefulness of strategies

- The proposed strategies are adequate and useful to be applied in the public arena as well as at the MoHSS with the aim of addressing issues pertaining diarrhoeal disorders.

How relevant are the strategies

- The strategies are relevant to addressing the current situation based on the study findings eg 64% reportedly had inadequate knowledge, 72% had negative attitudes, and the minority, 8%, had good practices

### EXPERT NO: 2

Comment	Reviewer comment
1. Clarity of the strategies	They are clear. However there is need to explain explicitly how these came about in the delphi procedure. Moreover, with each Table be consistent as I hinted
2. Do you think the strategies are easy to understand?	They are. The researcher should have tried to be brief in most instances to ensure a good read. I suggested use of tables in some instances.

	I further suggest to limit on conceptual frameworks proposed to ensure simplicity. One key conceptual framework is adequate
3. Are the strategic objectives achievable?	Yes, though there is need to insert baselines and targets
4. Are the strategic objectives practical?	Yes
5. The generality of strategies	The researcher can do well with grouping items under strategies e.g grouping them under KAP as I suggested
6. Can these strategies be applied in other situations?	Yes. However for transferability, the researcher need to be explicit with the Delphi procedure. They need also to state how and who developed the vision, mission, goals, objectives
7. Accessibility of strategies	The last table is key for summary and accessibility of these strategies. Dissemination strategy can be proposed
8. Do you think the strategies are very important and significant for public health?	Yes

EXPERT NO: 3

**A REPORT ON EVALUATION OF CONCEPTUAL FRAMEWORK FOR HEALTH PROMOTION STRATEGIES DEVELOPMENT FOR MOTHER/CAREGIVERS OF CHILDREN OF UNDER FIVE YEARS IN OHANGWENA REGION**

Date: 20 May 2021

Scope of work reviewed: Chapters 5 and 6

**Introduction:**

It was an honor to evaluate chapters 5 and 6 relating to a **conceptual framework for health promotion strategies development for mother/caregivers of children of under five years in Ohangwena region**. The evaluation considered the following criteria/questions:

1. Clarity of the strategies
2. Do you think the strategies are easy to understand?
3. Are the strategic objectives achievable?
4. Are the strategic objectives practical?

5. The generality of strategies
6. Can these strategies be applied in other situations?
7. Accessibility of strategies
8. Do you think the strategies are very important and significant for public health?
9. Clinical significance and usefulness of strategies
10. How relevant are the strategies?

**General comments:**

- 

Overall, Ms Bauleth demonstrated good understanding of development of a conceptual framework.

- 

The concept is great; the health promotion strategies proposed are important to address the diarrhoea problem in Ohangwena region.

- Good description of concepts and strategies.
- Good contribution to emphasis on addressing socio-behavioural and cultural practices that impact on health seeking behaviour and health aspects especially for children under five

**Some comments to enhance clarity and implementation of proposed strategies**

- 

Chap.5 table 5.1 highlights 3 strategies while chap.6 presents 5 strategies. Review accordingly

- 

Clarify the desired **final result of the framework**: the title seems to imply the end result as “*development of strategies*” while terminus in the figures seems to imply “*appropriate health seeking behaviour (HSB)*”. Strategy development + effective implementation ~ = appropriate HSB.

- Implementation of the strategies is described in chap.6; this needs to be alluded to in the framework in chap.5.

Were FGDs done as part of validating phase 1 & 2 findings and proposed strategies that

were later included in the framework or the FGDs were used to validate the completed

framework? Their description in chap.6, with more strategies than those reflected in the

final conceptual framework in chap.5 is quite confusing. Clarify whether FGDs were part

of developing or validating the framework, and at what stage in this study they should

feature in relation to the framework in chap.5.

•

Chapter 6 is quite mixed with methodology and strategies/approaches for implementation.

It might be more appropriate to have some aspects of chap.6 (methodology) content precede

chap.5 (framework). Methodology precedes result (the framework). The other content that

relates to implementation approaches and measuring achievement of the results from

proposed strategies can be maintained in chapter 6, following the framework.

### Specific findings, comments and recommendations by evaluation criterion

Evaluation criterion	Remarks
1. Clarity of the strategies	<ul style="list-style-type: none"> <li>• The major concepts i.e. agents, recipients, context, procedure, dynamics and terminus are explained. Also, other aspects like the five levels of the social-ecological model are well explained</li> <li>• Most concepts are used in a manner consistent with their definitions</li> <li>• The student related concepts well to the findings of phase 1 and 2 studies as explained.</li> <li>• However, description of dynamics needs improvement.               <ul style="list-style-type: none"> <li>○ Describe what factors will drive agents and recipients to change; how the strategies will be implemented to achieve terminus; and how that energy for HSB will be maintained. This is lacking in table 5.1. See comments within the reviewed document</li> </ul> </li> <li>• Review description of procedure viz-a-viz the definition. Procedure, according to Dickoff <i>et al</i>, is a description of the environment and path that activities to be implemented <u>will take towards realizing the goal/terminus</u>. The procedure described in chap.5 is what guided the development of strategies, rather than</li> </ul>

- There is repetition in the chapters; consolidate the strategies, goals, strategic objectives, focus areas & key success factors in one section as appropriate
- Resources for implementing the strategies: developing the messages based on identifies issues, packaging, dissemination and associated implementation factors need to be built into the strategies, implementation approaches and the framework
- In chap.6, highlight current status of healthcare interventions and gaps that the proposed strategies will enhance; acknowledging MoHSS ongoing health promotion efforts.
- The strategies, the how of implementation, target results as highlighted in key performance indicators need consolidation for easier comprehension, and less repetition i.e. link problem to strategies to how the strategy will be implemented (what, how, when, why, by whom) to the desired result, which addresses the problem, the context and dynamics.

Evaluation criterion	Remarks
	<p>how the strategies <u>will be</u> implemented to reach terminus  <i>(consider related comment on what “terminus” is considered for the framework i.e. development of strategies or appropriate HSB).</i> The described procedure is sufficient if terminus</p>
2. Simplicity: Are the proposed strategies	Proposed strategies are easy to understand.
3. Scope and goal of the framework: Are the strategic objectives achievable?	<ul style="list-style-type: none"> <li>• The ultimate goal is not clear i.e. whether it is development of strategies just or appropriate HSB, the latter requiring additional guidelines for implementation of the proposed strategies.</li> <li>• The framework in chap.5 seems to focus on/stop at “development of strategies”. Chap.6 describes approaches or</li> </ul>
4. Are the strategies	Yes
5. The generalizability of strategies: Can these strategies be applied	The 3 proposed strategies in table 5.1 i.e. empowering mothers/caregivers...; enhancing appropriate health-seeking behaviour; and empowering stakeholders and actors... can be
6. Accessibility of strategies	Provisions of the framework can easily be made accessible to target agents and recipients for action. However, there is need for explicit examples of messages targeted at identified issues, activities and
7. Importance: Do you think the strategies are very important	Yes, proposed strategies are important for addressing high prevalence of diarrhoea among the under-fives in Ohangwena region
8. Clinical significance and usefulness	The strategies have clinical significance in addressing the burden of diarrhoea and its effect on the children under five years, families

Evaluation criterion	Remarks
	diseases. However, content in this regard needs enhancement in the
9. How relevant are the strategies	They are relevant to address preventable diarrhoea disease burden

EXPERT NO: 4 Dr. Washington Shuumba

#### Clarity of the strategies?

The strategies are clear but the candidate can explore ways of making these clearer including reconsidering the way of presentations of the contents as well as including some more practical examples of what agent and recipients can do at implementation levels. These could be added under approaches of implementations.

#### Do you think the strategies are easy to understand?

The strategies are to a certain extent understandable. However, the candidate should explore ways to enhance this understandability by paying attention to the use of connecting sentences and ensuring that the flow of information is smooth also for the stakeholders with moderate to low research and academic background. I have made some suggestions at specific sections in the main document reviewed.

#### Are the strategic objectives achievable?

The strategies are objective but, there is need to consider specifying for each what activity will be required for each proposed goal. Also, the role of the researcher and support system available to ensure recipient continued support be more elaborated.

#### Are the strategic objectives practical?

The strategies read to be practical in many aspects. However there is need for the candidate to explore ways how to ensure that for each of the targets and success factors suggested, there should be somewhere a specific interventions be attached to improving situations.. Cross check that these are included in the description of strategies for it to be realistic and facilitate practical implementation in the village/local level.

For example in the case of “Improved mothers and caregivers knowledge, there should be accompanying activities of education to raise awareness , for mothers, How often and give some indications of who will be facilitating the interventions

#### The generality of strategies?

The strategies read to be generally applicable in the context of diarrhea management.

The candidate is however advised to ensure that the concepts used are also as general as possible so that all stakeholders feel included. For example, the concept priest, may not appeal well to members of religions that do not use Priests. Therefore, it is suggested that we use church/religious leaders instead throughout. Other comments are appearing in the text.

#### Can these strategies be applied in other situations?

Yes, these strategies can apply in other settings because of the nature of the common approach required to tackle the disease under study and which currently is a health concern in many regions of Namibia and beyond.

#### Accessibility of strategies?

The candidate is advised to ensure accessibility of this strategies beyond the thesis document to be made available in articles and handy IEC materials to be reachable to mothers and other stakeholders such as community health assistants and even nurses and other clinical staff. Also to present these materials in local languages as possible.

Do you think the strategies are very important and significant for public health?

The strategies are very important and significant for public health because the aims of public health is to reduce morbidity and mortalities from preventable diseases including diarrheal diseases.

Clinical significance and usefulness of strategies?

This strategy is useful and has clinical significance as it targets among others to increase the knowledge and skills of mothers and caregivers how to prevent and manage diarrhea. This strategy will contribute to curbing incidences and fatality of diarrhea which is much needed as the study results indicate that, 73% of mothers/caregivers were categorized as having practicing inappropriate health-seeking. In addition, factors such as perceived cause of diarrhea, knowledge, attitude, and practices.

Also, it will support the reduction of health services related factors that contributes to complications of diarrhea morbidity by involving key stakeholders related to that for action.

How relevant are the strategies?

The strategies are relevant in that they target to work with mothers and or caretakers as recipients and empowering them to take active part in diarrhoea prevention and control in their households with supports from health sector experts.

EXPERT NO: 5

**EVALUATION REPORT OF STUDENT: Maria Bauleth, student number: 8704430**

**CONCEPTUAL FRAMEWORK FOR HEALTH PROMOTION STRATEGIES DEVELOPMENT  
FOR MOTHERS/ CAREGIVERS OF CHILDREN OF UNDER FIVE YEARS IN OH  
ANGWENA  
REGION**

It was an honor for me to evaluate this conceptual framework for health promotion strategies. My evaluation report is based on the criteria of clarity, simplicity, generality, accessibility and importance which are proposed by Chinn and Kramer (2011: 196-205)

**1. CLARITY**

**1.1 Conceptual framework**

The candidate adopted a conceptual framework by Dickoff et al.(1968) to develop strategies for health promotion based on the study findings. A map is constructed which shows how the key concepts are interrelated, as indicated in Figure 5.1. The aforementioned figure is labelled as Conceptual framework map of HSB(Health seeking behavior). However, the candidate did not acknowledge the source of that map. Nonetheless the figure is clear, and examples of all the elements in the framework are listed.

**1.2 The agents of the study**

The agents who will bring the proposed change are listed and also indicated in figure 5.2. One of the external agents is priest/s. This “priest” concept only refers to Catholic and Anglican clergyman. There are other religious faith leaders in the study setting, who are excluded by the “priest” term. Therefore, I suggest that

instead of “priest” rather use **religious leader/s**.

It is somehow difficult particularly for a novel researcher/student to understand/differentiate between internal and external agents in this figure, although they are clearly explained in the text which come before the figure. Is it possible to add “**internal agent**” to the figure?

Regarding the profile description of the internal agents, the functions of the doctors (prescribing treatment) and HEWs (regular contacts with the community) are clearly specified. However, the roles for the nurses are too general. **Suggestion:** on health education you may add that nurses give demonstrations on the preparation of ORS, health education on hygiene, and children feeding.

The recipients and context of the activity are clearly described. The HSB and health promotion according to different levels are clearly explained and well-illustrated in figure 5.3. (Just spelling of attitude under individual level on page 13, should be corrected).

Dynamics of the study. There is a table on page 18, table5.1, under main findings per objectives, on epidemiological factors, bullet #2:” nature and household” this one is not clear. It is left for the reader to guess. Elaborate bit to indicate nature of what. The procedures are well explained.

### **1.3 Strategies developed**

The candidate developed strategies to enhance mothers and caregivers’ health seeking behaviors in order to empower them regarding prevention and management of diarrhea. Although the strategies are specifically developed for mothers and caregivers for under-fives, they can be applied to the general population.

The proposed strategies are clear and easy to understand. The goals were formulated based on the focus group discussion with study participants. There are some points that need to be corrected on page 33 & 34, under 6.5.5, for instance point 2; should read: *Promote health of children....;*

**Goal 4** is unclear “improve mothers or perceptions” either clarify or rephrase the goal. If the candidate meant: improve mothers’ perception, if it is their perceptions, on what?

**Goal 6** also not clear: “Help for children ailments...” rather say: seek help for...

**Goal 7:** Instead of priest use a term which is inclusive of other religions.

Most of the objectives are achievable and practical. However, the objective for strategic focus area #4, that reads as follow: to ensure community ownership and control of their activities and future. How does one control the future? This is not clear and sounds unrealistic.

On the proposed strategies for HSB (table 6.1) under evidence(challenges), one of the challenges there is “poor knowledge”. What is poor knowledge? Rather say “low, lack of knowledge or inadequate knowledge”.

**Strategic objective 3;** Key indicators: Some % for the indicators are missing. Some years 2031 are written as percentages. Editing is needed before the final document is submitted for examination.

**Strategic objective 5,** under facilitation of strategies implementation, you wrote that you will conduct monthly customer satisfaction surveys. Is this realistic?

## 2. SIMPLICITY

The conceptual framework map is simple and easy to understand. The figure of study agents might be somehow a challenge to a novel researcher or undergraduate student (figure 5.2). There is no clear distinguish between internal and external agents on the figure in terms of labelling (it is not written internal or external). Nonetheless, the other figures are clear and can be easily understood.

The proposed approaches are good but there is no clear alignment with the developed strategies. There is a need to simplify it to make it easier for the implementers.

## 3. GENERALITY

The developed strategies aim to promote health as well as to empower health seeking behavior of mothers and caregivers for the under five children in Ohangwena region, particularly for diarrhea. Although these strategies are developed with those specific reasons, they can be applied in other situations in public health regardless the condition.

**Suggestion:** Approaches to enhance HSB, instead of focusing on mothers and caregivers’ literacy alone, that will be better to include fathers and make it parents and caregivers’ literacy.

#### **4. ACCESSIBILITY**

The approaches to empower mothers and caregivers regarding prevention and management of diarrhea of children under five years as well as to enhance appropriate health seeking are explained, although there is no clear alignment with strategies. These approaches will guide the implementers and it will make it accessible to different health care workers in public health. However, on the house level visits and support, it is not clear who will do those visits and how realistic it is. Furthermore, the information on community involvement is incomplete or some information/words are missing.

Regarding the strategies and Activities to be established to empower stakeholders /agents, it seems the doctors are excluded when it comes to support health care workers. Further explanation on the exclusion might be needed.

#### **5. IMPORTANCE/UTILITY**

These strategies are important and will be useful in public health. They can be applied in other situation which affect the public other than diarrhea.

#### **6. RELEVANCE**

The developed conceptual framework and strategies are relevant as they are based on evidence from the study findings. The strategies were presented to panel of experts for validation. Their participation indicated that these strategies are relevant to the proposed context and outcomes of the study.

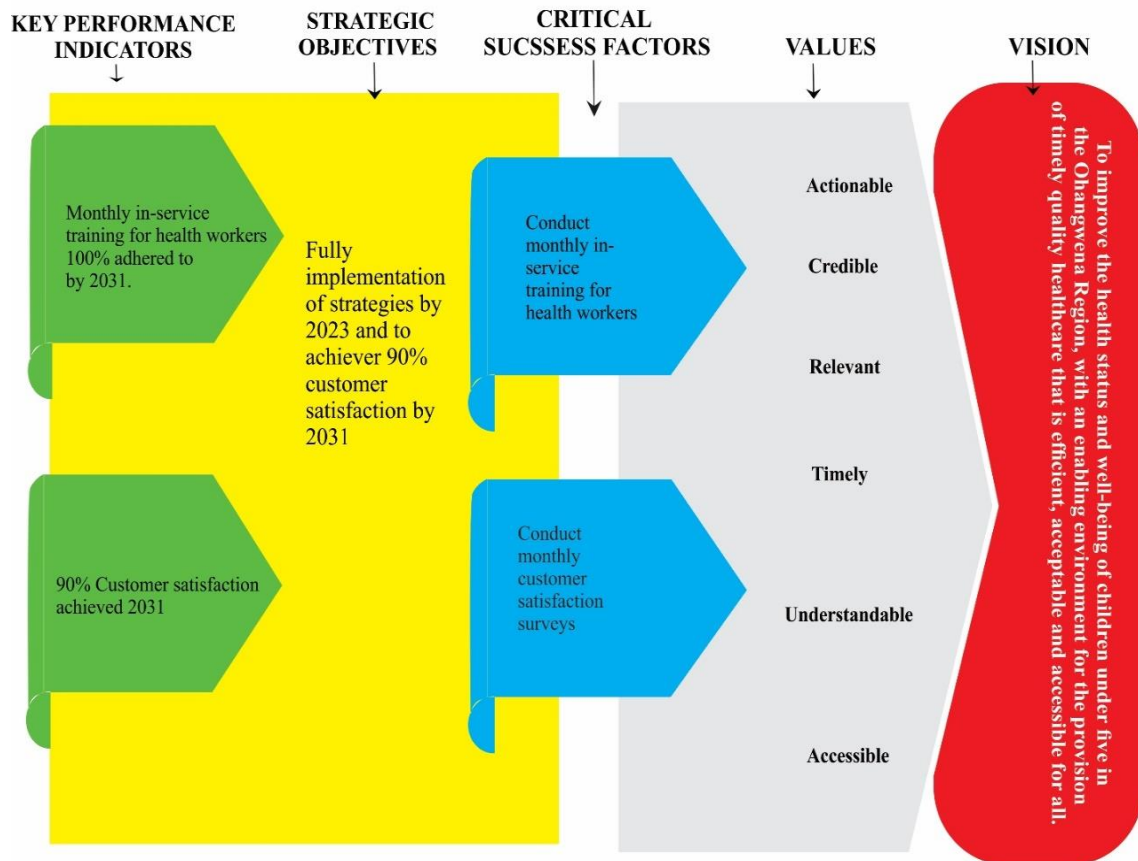
Thank you

<b>Evaluation criteria</b>	<b>Comments</b>
<b>Clarity of the framework</b>	<ul style="list-style-type: none"> <li>• The framework is well clarified with simple understandable terms/concepts.</li> <li>• All the components of the survey list from Dickoff's practice oriented theory that formed the basis for the development of framework are incorporated.</li> <li>• The interrelationship and influence that the components have on one another are indicated. However, the relationship between the agents and the recipients is not coming out clearly, since their directions faced different direction. Their only connection is the context. The lack of their connectedness will delay or hamper the anticipated outcome.</li> <li>• I suggest the pharmacists to be added to the internal agents since they play a role in the provision of treatment and health education on the use of those medications and their effects.</li> <li>• The priest under external agents can also be replaced by the churches to be inclusive.</li> <li>• Under the Procedure, strategies should be finalized already, ready for implementation but not to be developed at that stage. Therefore, development of should be deleted, otherwise nothing will be achieved.</li> <li>• The types of dynamics other than just challenges are not indicated. Therefore, it is not easy to answer this question: What is the energy source of the activity?</li> </ul>

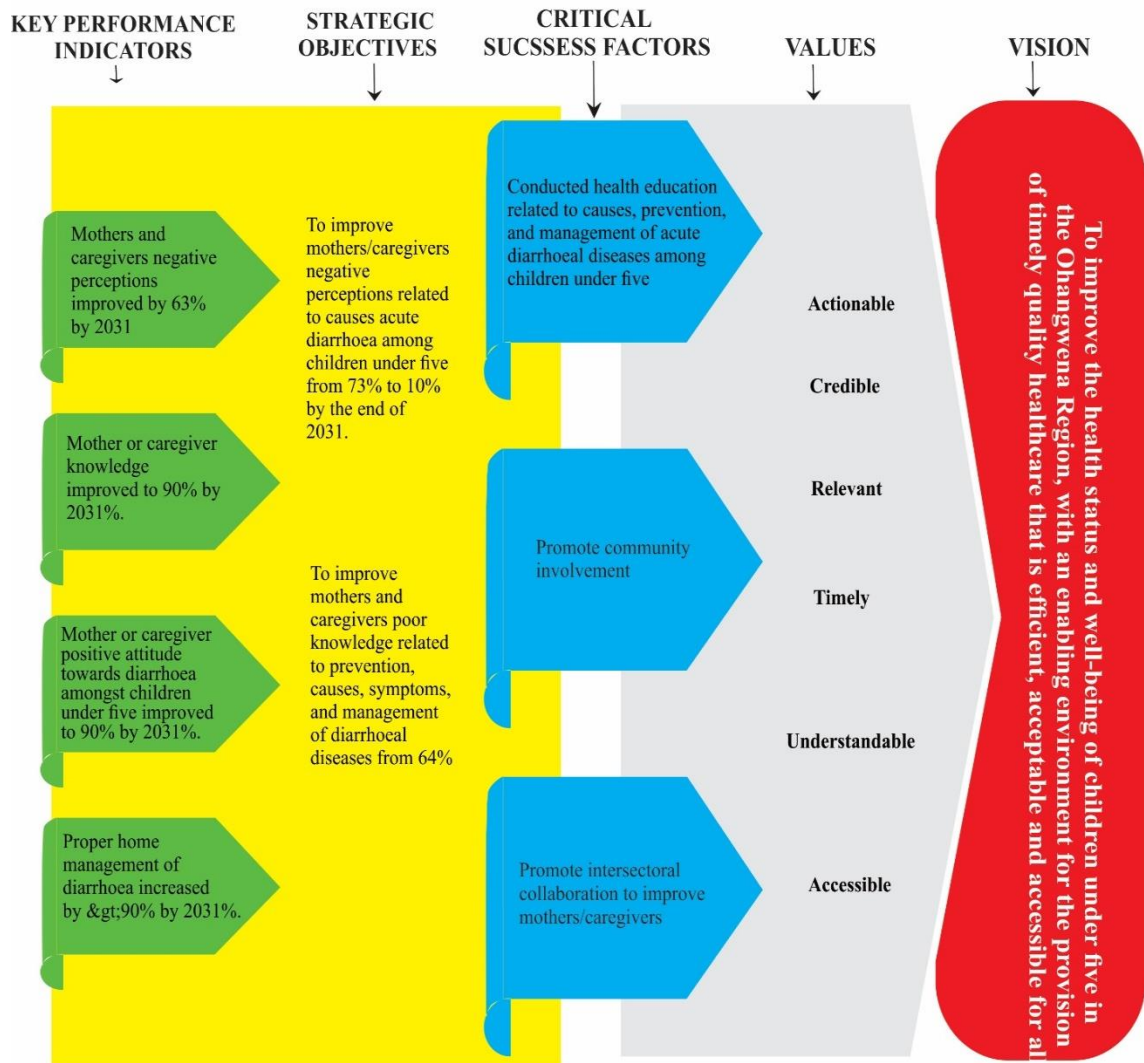
	<ul style="list-style-type: none"> <li>• the framework; hence it is not easy to determine the interrelatedness of the survey list and the major concepts/activities.</li> </ul>
<b>Simplicity of the framework</b>	<ul style="list-style-type: none"> <li>• The framework is easy to follow especially from the context to the terminus.</li> <li>• The concepts used in the framework are simple, not complex.</li> <li>• Descriptions/activities are clearly indicated at each component except at the dynamics.</li> </ul>
<b>Generality of the framework</b>	<ul style="list-style-type: none"> <li>• The NGOs are not specified (even in the text). Are they all health related?, Which ones?</li> <li>• “The scope, application and purpose of the framework is clearly stated in the outcome</li> </ul>
<b>Accessibility of the framework</b>	<ul style="list-style-type: none"> <li>• The framework can be tested in the proposed contexts.</li> </ul>
<b>Applicability</b>	<ul style="list-style-type: none"> <li>• The concepts’ indicators are identifiable in reality.</li> <li>• Indicators are within the realm of health promotion.</li> </ul>
<b>Importance of the framework</b>	<ul style="list-style-type: none"> <li>• The framework is very much useful in the management of diarrhea and in influencing the healthy seeking behavior.</li> </ul>

## ANNEXURE L: STRATEGIES

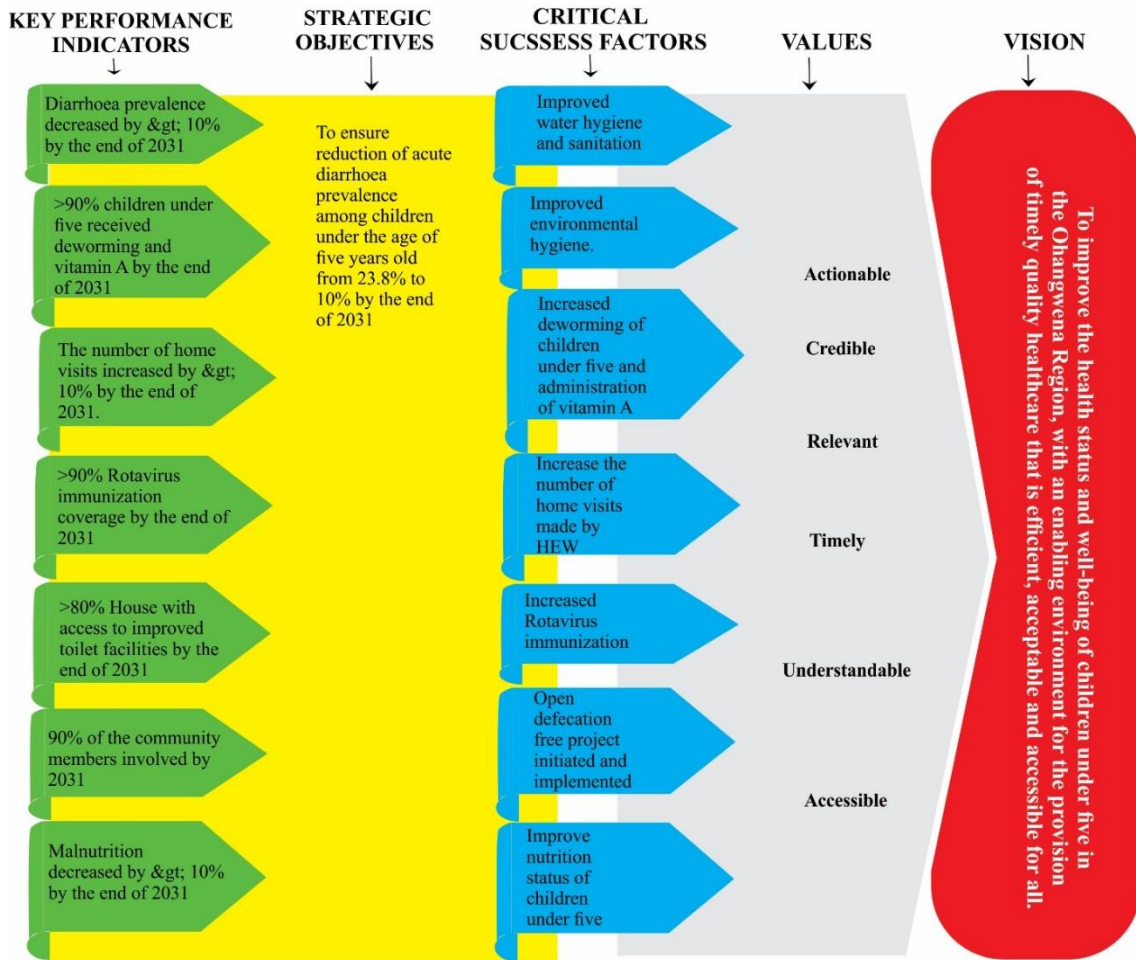
ANNEXURE L: Strategic plan: Empower stakeholders and actors that play a role in mitigating factors associated with causes of diarrhoea among children under the age of five years



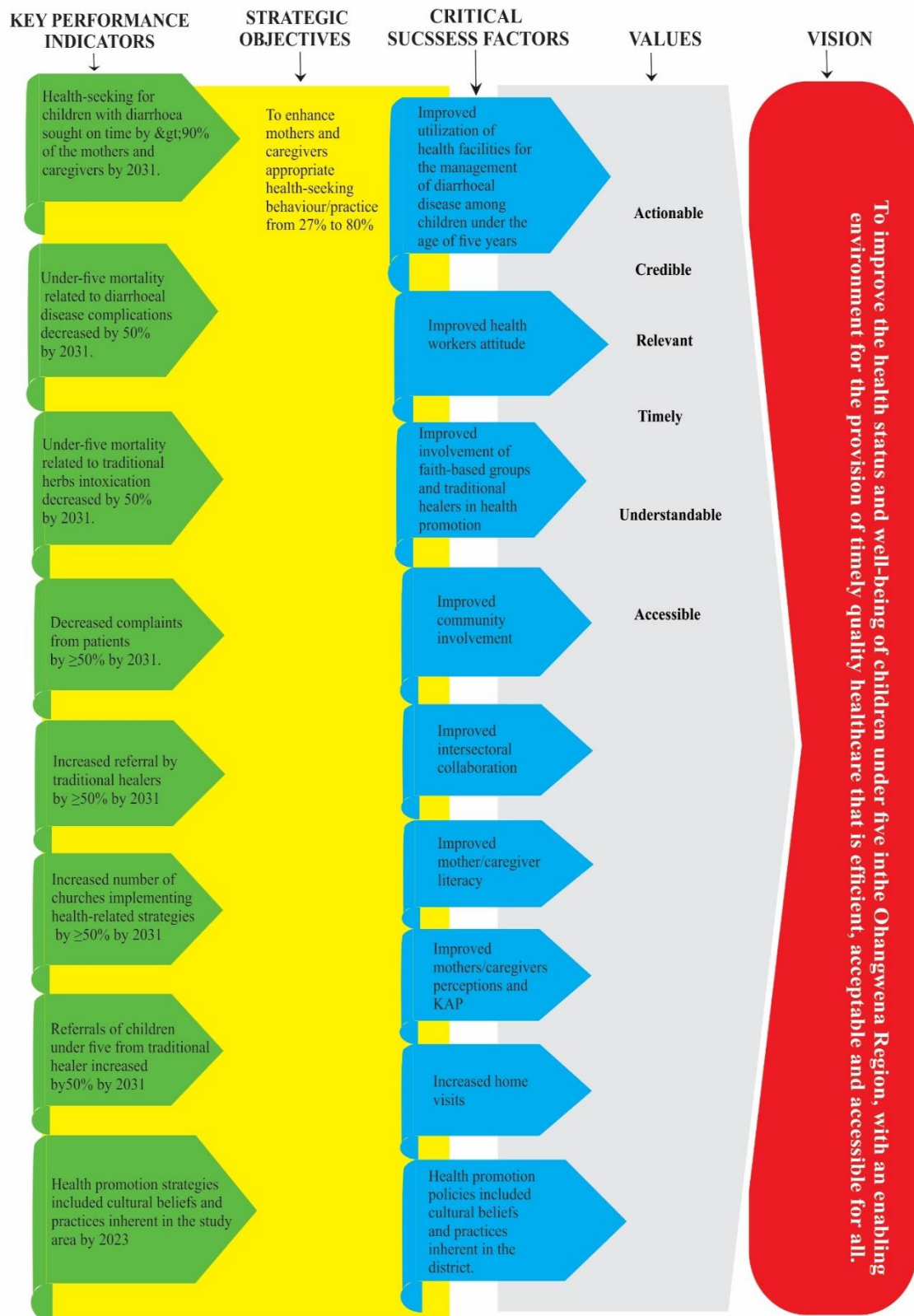
## ANNEXURE M: Strategic plan: Develop personal/individual skills



**ANNEXURE N: Strategic plan:** Empower mothers or caregivers in terms of the causes, management, treatment, and prevention of diarrhoea among children under the age of five years



## ANNEXURE O: Strategic plan: Enhance appropriate health-seeking behaviour



## ANEXURE M: EDITOR'S REPORT

Sally C. Kauluma  
Proofreading and Editing Services  
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7 July 2022

To Whom It May Concern:

I hereby certify that I am a recognized proofreader and editor, having edited numerous doctoral theses, magazine articles, newsletters, press releases, etc., since 1980.

Last September I proofread and recommended grammatical and stylistic changes for Maria Bauleth's doctoral dissertation: *Development of Strategies to Promote Health and Enhance Appropriate Health-Seeking Behaviour Among Mothers and Caregivers of Children Under Five with Acute Diarrhoea in the Ohangwena Region of Namibia.*

The final decisions about what to change and what to keep were in Ms Bauleth's hands.



S. C. Kauluma

**ANNEXURE M: SAMPLE INTERVIEW TRANSCRIPTS AND SAMPLE CODING SCHEME**

**Participant 1 Doctor**

R: Good morning Dr

P: Good morning madam

R: How are you?

Dr: I am fine; how may I help you?

R: My Name is Maria Francineth Bauleth, a nurse by profession. I am a student at the University of Namibia currently pursuing a PhD in Public Health. First and foremost, let me use this opportunity to thank you for availing yourself to come and attended this interview. The purpose of the study is to investigate the health-seeking of mothers/caregivers of under-five children about acute diarrhea, to develop strategies to enhance appropriate health-seeking behaviors. I would like to inform you that the discussion is going to take about 30-40minutes. Confidentiality related to the information that you are going to provide will be kept because the information you will provide will not be shared with unauthorized persons. Equally, anonymity will be maintained since you are not required to provide your names, and the information that you are going to provide will not be linked to you. Our interview is going to be audio-recorded to ensure that all the information you have provided has been captured. Participation in this study is voluntary; you have the right to refuse to take part or to withdraw for the study anytime should you feel so, without any penalty. Equally, you are not going to be forced to respond to a question that you think you don't want to respond to it, if the asked is not clear, you are welcome to ask for clarification or repletion. Finally, I am humbly requesting you to keep your cell phone on silence in case if you have it with you so that it's not going to distract us during the discussion. Thanks once again. Do you have perhaps have any questions before we start?

Dr: No, thanks, madam, we can start.

**R: I just want you to tell me your lived experiences regarding the health behaviours of mothers with children who are suffering from diarrhea?**

<b>CODING DATA INTO THEMES</b>	<b>CODES/themes</b>
Participant 1 Doctor Dr: For most of them here in our setting they come and seek medical care at a very late stage that is the experience I have and also most of them you can see that it often leads to diarrhea because of their own negligence with the children would say that is most of the experience that I have with them	Delay health seeking  Negligence

and despite the advice, we give to this mothers they will repeat this mistakes over and over again and they also don't follow instructions when you want to treat them or when you are treating them and they keep coming back with the same complain of diarrhea it does not change.

R: What are the main child health problems in this area?

Dr: The main medical health problems, children get respiratory conditions you get common colds, pneumonia you get TB as well is actually also very common and upper respiratory infections and malnutrition and diarrhea those are actually the main ones that we get.

R: According to your perspective what are the causes of those diseases?

Dr: Ok it depends with diarrhoea I believe it is mostly on the mother side, the **personal hygiene** of the mother's the one that contributes to diarrhea and also what they feed them, you can find a **small baby but they are already feeding them with Maere and no matter the fact that they were told** not give it maybe it is because of social circumstances but they still give it, then for the respiratory ones, those are a bit unavoidable because they are the air that I can't really give more blame to the mother it can be viral or bacterial we can't avoid that one.

R: Do many under-five dies in this hospital or area?

Dr: Yes they do

R: They do die mostly from what?

Dr: I don't have the statistics I cannot tell you from what exactly, but we do have a lot that **passes on from diarrhea**, and sometimes we help them if they present early but if someone comes with a child that has severe, we try our best to help them but **because of the complications** that a child can have the baby will still demise.

R: For the children, illness do perhaps mothers use traditional medicine or maybe home remedy before coming to the hospital?

Dr: Yes we have quite a number that first tries to go to **the traditional healer** and then only when the things **worsened that is when they come**, it depends to the mix of the traditions they have like they wait for the mother to be cut if the child has diarrhea they wait for that to happen before they actually come to the hospital and most of the times if the child actually dies in the hospital **they blame it on the mother, it is because the mother was not cut and it is done at the anal area**. That is why they always present late because they will try to do that first before they come.

R: Is diarrhea a problem here in the under-fives?

Dr: it is very common

R: If the child has diarrhea what is the mother expected to do?

Dr: We focus on personal hygiene, we try to teach them the way they should clean the bottles for those that bottle feeds the babies, and when the child has gone to the toilet they have to wash the child and how to handle the food as well and only when they get diarrhea we tell them how they must hydrate the child and take the medications, **but may at times they don't actually do it the right way so that they come back with sever case**.

R: What other cultural believes are being practiced in the area that you came across or hired?

D: For **diarrhea perennial** cutting is all that I have experienced, but for other under-five diseases like when children having chronic abdominal pain they give them **herbal medications**

Health  
practionoers  
perspectives

Causes of  
mortality

Traditional  
belives  
Delay health  
seeking  
Traditional  
belives

Ignorance

Perineal cutting  
Home  
management of  
diarrhoea



TRANSCRIBED INDIVIDUAL INTERVIEWS WITH DOCTOR 1

VENUE: CONSULTING ROOM AT ENGELA HOSPITAL

Sex: Female

DATE: 24 January 2020

THEMES	SUB-THEMES	CODES
1. Health seeking practices	<ul style="list-style-type: none"> <li>- Delay health seeking</li> <li>- Traditional believes</li> </ul>	<ul style="list-style-type: none"> <li>• Experience</li> <li>• Mother/caregiver Ignorance</li> <li>• Negligence</li> <li>• Poor education</li> <li>• Perennial cutting</li> <li>• Traditional healer</li> </ul>
2. Causes of under-five diseases	<ul style="list-style-type: none"> <li>- Health practitioners perspectives</li> <li>- Community perspectives</li> </ul>	<ul style="list-style-type: none"> <li>• Hygiene</li> <li>• Feeding practices</li> <li>• Bacterial and viral</li> <li>• Negligence</li> <li>• seasonal</li> <li>• ‘Eenhalo’</li> <li>• “Oshipa”</li> <li>• “Omushila”</li> </ul>
3. Causes of mortality in children under-five	<ul style="list-style-type: none"> <li>- Health workers view points</li> </ul>	<ul style="list-style-type: none"> <li>• Diarrhoea complications</li> </ul>
4. Contributors to under-five mortality	<ul style="list-style-type: none"> <li>- Delay health seeking</li> <li>- Complications of diarrhoea disease</li> </ul>	<ul style="list-style-type: none"> <li>• Delay in health seeking</li> </ul>
5. Social factors	<ul style="list-style-type: none"> <li>- Home management of diarrhoea</li> <li>- Male involvement</li> </ul>	<ul style="list-style-type: none"> <li>• Traditional healer</li> <li>• Home remedies</li> <li>• Spiritual healer</li> <li>• Lack of family/social support</li> <li>• Discrimination</li> <li>• Parenting</li> </ul>
6. Common under-five health problems in the area	<ul style="list-style-type: none"> <li>- Health workers perspective</li> </ul>	<ul style="list-style-type: none"> <li>• Common colds</li> <li>• Pneumonia</li> <li>• TB</li> <li>• Malnutrition</li> <li>• Diarrhoea</li> </ul>
7. Health service factors	<ul style="list-style-type: none"> <li>- Inadequate health provision</li> </ul>	<ul style="list-style-type: none"> <li>• Health education</li> </ul>

## ORIGINAL ARTICLE

## Factors associated with the nutritional status of children under-five years of age with diarrhoea in Ohangwena Region, Namibia

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### ABSTRACT

**Purpose:** This study aims at assessing the nutritional status of children under-five years of age with acute diarrhoea, determine the prevalence of malnutrition and identifying factors associated with undernutrition among children under 5 years old in Ohangwena Region, Namibia.

**Methods:** Cross-sectional, non-interventional study was conducted. A structured questionnaire was administered through face to face interviews. A total of 530 children under-five years from 530 households were included in this study. The nutritional index was measured based on Child Growth Standards proposed by WHO. The anthropometric measures used included mid-upper arm circumference (MUAC) and weight-for-age Z score (WAZ). Logistic regression was applied to determine the factors associated with the prevalence of malnutrition.

**Results:** The overall prevalence of diarrhoea among the children under-five years was 24%, of these, 77% were suffering from malnutrition. Malnutrition prevalence was observed to be significantly associated with a child suffering from diarrhoea ( $p < .05$ ) and children aged between 12-23 months  $p \leq .001$ . Equally, the highest prevalence of malnutrition 29.4% [95% CI = 24.65; 34.15] was found amongst children under-five years old with mothers/caregivers aged 18-30 years. The strongest predictor of malnutrition was the mother/caregiver not being an educated recording odds ratio of 20.2.

**Conclusions:** This study identified the need to develop and intensify strategies that may improve nutritional status in children under-five years such as health education, improved literacy, and women empowerment.

**Key Words:** Nutritional status, Malnutrition, Children under-five years old, Diarrhoea, Anthropometrics

### 1. INTRODUCTION AND BACKGROUND

Malnutrition remains a public health problem in most developing countries and one of the major causes of child death worldwide. In many countries, the nutritional problem has not yet resolved to the desired level, despite the effort of most government interventions to address the issue.<sup>[1]</sup> Sk-

oufias, Vinha, and Sato indicate that in 2014, 171 million children under the age of five had stunted growth.<sup>[2]</sup> Based on a study conducted in Nepal, it was reported that nearly 37% of children were suffering from underweight, 41% from stunting and 11% were suffering from wasting.<sup>[3]</sup> Equally, in Sub-Saharan Africa, undernutrition is reported to be

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# Epidemiology and factors associated with diarrhoea amongst children under 5 years of age in Engela district in the Ohangwena region, Namibia



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**Background:** Diarrhoea remains a public health problem and an important cause of morbidity and mortality amongst children, mainly in low- and middle-income countries. In Namibia, the national prevalence of diarrhoea was 17%; it was responsible for 5% of all deaths in children under 5 years old and is the second leading cause of death.

**Aim:** The purpose of this study was to assess the epidemiology and factors associated with acute diarrhoea amongst children less than 5 years of age in Engela district in the Ohangwena region, Namibia.

**Setting:** The study was conducted in Ohangwena Region in Namibia which extends east to west along the borders of the southern part of Angola.

**Methods:** A cross-sectional study was conducted. A structured questionnaire was administered through face-to-face interviews. Descriptive statistics were used to describe the socio-demographic and epidemiological data of diarrhoea and logistic regression analysis was used to determine the factors associated with the prevalence of diarrhoea.

**Results:** The study found a prevalence of 23.8% for diarrhoea in the 2 weeks period preceding the survey amongst children aged under 5 years. The prevalence of diarrhoea was statistically significantly associated with children ( $p < 0.05$ ). The strongest predictor of the prevalence of diarrhoea was the residential area 'informal settlement', with an odds ratio of 36.42. This implies that children living in the informal settlement are 36.42 times at risk of contracting diarrhoea as compared to those living in other residential areas.

**Conclusion:** epidemiology; factors; diarrhoea; under-5 years children; Engela district; Ohangwena region; Namibia.

**Keywords:** COVID-19; pandemic; Nigeria; family physicians; frontline.

## Background

Diarrheal disease is ranked as the second most common cause of death amongst children under 5 years of age, leading to an estimated 1.87 million deaths globally.<sup>1</sup> More than half a million children under 5 were estimated to have died from diarrhoeal disease in 2015.<sup>2</sup> Diarrhoea remains a public health problem in developing countries, accounting for more than 760 000 deaths of children aged under 5 every year, in both low- and middle-income countries.<sup>3,4</sup> The majority of deaths take place in Africa and South Asia; however, nearly half of those deaths occur in Africa.<sup>1,5</sup> Even though over the past 25 years mortality from diarrhoea in children aged under 5 years has declined considerably worldwide, in sub-Saharan Africa morbidity from diarrhoeal disease remains high as a result of inadequate water, poor sanitation or hygiene, insufficient breast feeding and malnutrition.<sup>6</sup> Increased internal migration to African cities results in overcrowding and is often associated with outbreaks of diarrhoea amongst children under the age of 5 years. Children aged under 5 are the most vulnerable to diarrheal disease, especially during the first 2 years of life.<sup>7</sup> Various studies have indicated that epidemiologic factors that contribute to the occurrence of diarrhoea are complex.<sup>1,1</sup> Nevertheless, factors such as residential area, unemployment, household income, mother or caregiver age, number of people per household, access to information, type of toilet facilities, access to safe drinking water, child immunisation status, nutritional status and number of sleeping rooms have been reported to contribute to diarrhoeal prevalence.<sup>7,8,11,12</sup> According to a study conducted by Thiam et al.<sup>4</sup> in Mbour, Senegal,