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Factors Associated with Hygiene Practices Among Breastfeeding Mothers Attending Maternal and Child Health Clinic at Mandera County Referral Hospital, Kenya

Sadam Abdi Maalim[1], Dominic Mogere[2], Diana Njuguna[3]

[1]Student, Mount Kenya University
[2]Senior Lecturer, MKU, Mount Kenya University
[3]Senior Lecturer, DKUT, Dedan Kimathi University of Technology

ABSTRACT

Hygiene practices play an important role in the well-being and health of both breastfeeding mothers and their infants. Poor hygiene practice might contribute to spread of infection and disease, posing significant risks to the health of the mother-infant dyad. Understanding the factors associated with hygiene practices among breastfeeding mothers is essential for designing effective interventions to improve hygiene behaviors and promote better health outcomes. The study objective was to identify the factors associated with hygiene practices among breastfeeding mothers attending Maternal and Child Health (MCH) clinic at Mandera County Referral Hospital. By examining these factors, the study aimed to inform targeted interventions that promote proper hygiene practices among breastfeeding mothers and ultimately improve maternal and child health in the region. This study used a cross-sectional descriptive research design, utilizing both qualitative and quantitative data collection techniques. A sample of 360 breastfeeding mothers attending the MCH clinic at Mandera County Referral Hospital were recruited. Quantitative data was collected through structured questionnaires. Additionally, Focus Group Discussions (FGDs) and in-depth interviews were used to collect qualitative data. Quantitative data was analyzed using SPSS Version 26 while qualitative data was analyzed thematically. Findings revealed varying levels of knowledge and adherence to hygiene practices among participants. Socio-cultural beliefs, economic constraints, and access to resources were identified as key determinants influencing hygiene behaviors. Limited access to clean water, sanitation facilities, and hygiene products posed significant challenges, particularly in rural communities. Healthcare providers played a crucial role in promoting hygiene practices but faced limitations in resource availability and infrastructure. Recommendations include integrating hygiene education into routine clinic visits, enhancing access to water and sanitation infrastructure, and strengthening community-based initiatives. Addressing socio-economic disparities and cultural norms is essential to improving hygiene practices and maternal and child health outcomes in Mandera County. Collaborative efforts involving policymakers, healthcare providers, and community stakeholders are needed to implement effective interventions and address the identified barriers.

CHAPTER ONE
INTRODUCTION

1.0 Introduction

This chapter provides an overview of the research focus, outlines the significance of studying hygiene practices among breastfeeding mothers, introduces the Mandera County Referral Hospital as the research setting, and highlights the key factors that are anticipated to be associated with hygiene practices in this context. Hygiene practices are crucial elements of MCH, ensuring the well-being and optimal development of both mothers and infants. Among the various stages of maternal care, breastfeeding holds a unique significance due to its long term health benefits for mother and child. The Mandera County Referral Hospital, serving as a pivotal healthcare center in this region, plays a critical role in providing comprehensive care to breastfeeding mothers and their infants.

1.1. Background

In regard to WHO, hygiene refers to the situations and behaviors that support health maintenance and disease prevention. All infants and young children should be breastfed because it is healthy and encouraged (WHO 2018). Over 4-6 million under-five years are thought to have died globally from acute respiratory infections and diarrhea, with acute respiratory infections accounting for 47% of those deaths (Black et al., 2017). Infant mortality rates in particular and childhood mortality rates in general are indicators of health factors. One of the Millennium Development Goals (MDG 2030) is to minimize child mortality by two thirds.

WHO, states that 78% of under-five who die from diarrhea occur in the African and South-East Asian regions. Diarrhea primarily affects children for a variety of reasons, including poor cleanliness. In the Arba Minch District of Ethiopia, the prevalence of diarrheal illness among under-five over a two-week period was estimated to be 31.0% (WHO, 2016).

In Kenya, lack of safe running water, mother or caregiver not washing hands after changing baby's napkins, lack of basic sanitation and hygiene are major factors leading to diarrhea among children. Children are more prone to contract diseases from mothers who don't practice good hygiene. According to UNICEF (2021c and 2019b), breastfeeding mothers' hygiene habits have significant impacts on mortality of under-fives. Breasts being connected with sexual behavior and pleasure and breastfeeding only being permitted in private settings are two cultural factors that are linked to cleanliness practices among breastfeeding mothers. This may affect how nursing moms follow cleanliness rules like washing their breasts before nursing the infant because it makes them uncomfortable (UNICEF 2019). The hygiene practices that are normal and acceptable in a community are greatly influenced by its cultural norms and dominant ideas. Therefore, for the efficient execution of public health objectives, health public policies must always take into account the cultural status of a society, attitudes and beliefs prevailing in a place, and the values supported by the society (Demmelash et al., 2020)

Medical students' overall hand hygiene was mediocre, but it became better as their training went on. The assessment of outfit hygiene was found to be moderate, albeit not as much as that of hand hygiene. It was also found to be lower in males and to have decreased over time, suggesting that more reinforcement of clothing hygiene practices is necessary as clinical training advances. The majority of medical students felt that the hygiene of the equipment was inadequate, thus this needs to be brought up as a possible subject for improvement during clinical training. This study indicates that medical students' equipment and

apparel hygiene knowledge, attitudes, and practices were not up to par and should be given more attention throughout medical clinical training (Kaur, Suseela, 2020).

Without breast hygiene, the baby can be put at the risk of becoming unwell with diarrhea and vomiting. Barriers to hygiene practices among breastfeeding mothers include, lack of clean running water, Lack of knowledge on the importance of observing good hygiene when breastfeeding and forgetfulness(Tsekleves et al., 2022). In Kenya's north eastern region is the county of Mandera. It shares boundary with Wajir County to west and south, Ethiopia to north, Somalia to east. Mandera Town serves as the nation's administrative center. Mandera County has a total area of 26,464 KM^2 and 1,025,756 inhabitants (KNBS, 2021). The county is primarily semi-arid; most places lacks stable water supply or the water mass therefore receive little annual rainfall. The vast majority of people are pastoralists who live nomadic lifestyles. Additionally, the majority of the homesteads are dispersed huts with grass for a roof. The county is one of the most marginalized counties in the nation as a result of its harsh climatic conditions and underdeveloped infrastructure (KNBS, 2020). The county makes a substantial contribution to Kenya's economic strength in terms of economic activity. 90% of the wild game that supports the tourism industry is found there, and it produces between 50 and 70 percent of all cattle (GOK, 2016). Individual gains are modest in spite of this. About 13.3% of adults in the region depend on assistance from international and local NGOs because economic activity cannot provide means of subsistence. Additionally, they don't make use of the local credit facilities that are already in place. Compared to a national average of 35%, only 4.5% of poor and 1.1% of non-poor people's sought credits in 2015 (KNBS, 2017).

The county's infrastructure is subpar, and the hospitals are spread out. Only 30% of the people reside within five kilometers of a medical center Despite having 52 registered health centers and 150 skilled workers, barely 10% of these were operating when the county took over the health sector. Maternal mortality rates are high in the area as a result of the scarcity of competent medical facilities and the difficulty in accessing the few that do exist. 3,795 deaths per 100,000 live births were documented in the county in 2012, with the bulk of these deaths being brought on by a lack of access to medical facilities. The number of baby fatalities during this year was the greatest ever, and the global rate of maternal mortality was also the highest ever (Uusimäki et al., 2023)

Only 9.3% and 8.9% of women consistently cleaned their hands with the soap after using the restroom and before children feeding, according to another study. These results are less than those of a study carried out in Bangladesh, which found that 59.2% and 43.2% of mothers, respectively, consistently cleaned their hands with soap after using the restroom and before feeding their children (Demmelash et al., 2020).

1.2 Statement of the problem

Acute respiratory infections and diarrhea claim the lives of 4-6 million under-fives globally, with diarrhea alone contributing to 47% of these fatalities. The root cause often lies in inadequate hygiene practices, particularly among breastfeeding mothers. Despite breast milk's crucial role in bolstering infants' immune systems, poor hygiene during breastfeeding can lead to various illnesses and infections, including diarrhea, fever, and vomiting. Cultural factors, such as taboos surrounding breast exposure and misconceptions about breastfeeding in public, further complicate the issue. Additionally, unsanitary weaning practices and contaminated water sources exacerbate the risk, with research suggesting that inadequate hygiene may contribute to 50% of childhood malnutrition cases. Family and societal influences, combined with practical challenges like lack of clean water and time constraints, create barriers to maintaining proper hygiene habits among breastfeeding mothers.

Addressing this issue is paramount for improving child welfare and reducing pediatric fatalities. Therefore, this research aims to identify the key factors influencing hygiene practices among breastfeeding women attending the Maternal and Child Health (MCH) services at Mandera County Referral Hospital. By understanding these factors, tailored interventions can be developed to promote and support better hygiene practices among breastfeeding mothers, ultimately safeguarding infant health and well-being.

1.3 Justification

Breastfeeding stands out as a cost-effective healthcare measure crucial for supporting infant and young child nutrition, health, and survival, as highlighted by the World Health Organization (WHO, 2015). However, globally, including in Kenya, unhygienic breastfeeding practices have contributed to a rise in diarrheal illnesses among children, posing significant challenges to reducing under-five mortality rates. Effective initiatives must be implemented to address this issue, with a primary focus on promoting good breast cleanliness. Sterilizing the breasts is commonly advocated to prevent diarrheal diseases associated with early food introduction and sustaining breastfeeding (Gizaw et al., 2017).

Studies from various regions, such as Northwest Ethiopia and rural Bangladesh, have revealed important insights. For instance, mothers who receive guidance on appropriate weaning practices are more likely to adhere to them. Additionally, handwashing practices are significantly influenced by factors like the availability of water and soap, maternal education level, and accessibility of handwashing facilities near toilets (Chondra et al., 2017). However, research on breastfeeding mothers' hygiene behaviors in Kenya is limited. Many mothers lack awareness of critical breastfeeding hygiene practices, which adversely affects child health (Wanjohi et al., 2016). Therefore, this study is vital for identifying the determinants of breastfeeding mothers' cleanliness habits among attendees of the Mandera County Referral Hospital's Maternal and Child Health (MCH) services. The findings will inform interventions aimed at improving breastfeeding mothers' hygiene practices, thereby reducing the incidence of hygiene-related diseases like diarrhea among young children and enhancing overall healthcare outcomes. Additionally, this study can serve as a valuable resource for scholars interested in conducting similar research on this topic.

1.4 Study Objectives

1.4.1 General objective

To investigate factors associated with hygiene practices among breastfeeding mothers attending MCH, Mandera County referral hospital

1.4.2 Specific Objectives

1. Assess knowledge, attitudes, and hygiene practices of breastfeeding mothers at MCH, Mandera County Referral Hospital.
2. Identify the economic, cultural and family factors affecting hygiene among breastfeeding mothers at MCH, Mandera County Referral Hospital.
3. Determine barriers to hygiene practices among breastfeeding mothers at MCH, Mandera County Referral Hospital.

1.5 Research Questions

1. What is the level of knowledge, attitudes, and hygiene practices among breastfeeding mothers attending MCH at Mandera County Referral Hospital?
2. What are the economic, cultural, and family factors associated with hygiene practices among breastfeeding mothers at MCH, Mandera County Referral Hospital?

3. What are the main barriers preventing breastfeeding mothers from maintaining good hygiene practices at MCH, Mandera County Referral Hospital?

1.6 Significance

This research will have a big influence on the health and happiness of breastfeeding women and their babies in Mandera County. By addressing the factors influencing hygiene practices, the study will inform targeted interventions, policy changes, and educational initiatives that promote proper hygiene practices, reduce infections burden and ultimately improve MCH outcomes in County.

1.7 Limitation

The primary obstacle to conducting this research was the language barrier. Due to the study site's location in a region of northern Kenya that has experienced inter-clan fighting and more recent attacks by the Al-Shabaab terrorist group, security was a challenge. Due to the site's size and sparse population, which is dispersed around the county and practices pastoralism with little formal education, it was difficult to reach out to the local community. Community engagement and trust-building to establish rapport with the community and participants took time and effort.

1.7.1 Delimitation of the Study

Language support: Employing bilingual or multilingual researchers or interpreters who are familiar with local languages facilitated effective communication with participants.

Security measures: Collaborating with local authorities and security experts to ensure researchers' safety and implementing appropriate security measures when conducting fieldwork.

Community liaisons: Partnering with local community leaders or intermediaries aided in gaining access and building trust within the community.

Culturally tailored approach: Designing research materials and methods that respect and align with local cultural norms and practices enhanced participants' understanding and engagement.

Pilot testing: Conducting pilot studies and pre-tests identified potential challenges and informed necessary adjustments before full-scale data collection.

Ethical considerations: Adhering to ethical guidelines, obtaining informed consent, and addressing participants' concerns contributed to building trust and maintaining ethical research practices.

Diversified methods of data collections: Using a mix of data collection methods, e.g. interviews, focus groups discussions and observations, captured a more comprehensive understanding of participants' experiences and perspectives.

Transparency: Clearly acknowledging the study's limitations in the research report and discussing their potential impact on the findings enhanced the study's credibility.

It's essential to acknowledge these delimitations and limitations while striving to mitigate their potential impact on the research. Flexibility, adaptability, and a thoughtful approach to overcoming challenges was necessary to successfully conduct the study in this unique and complex context.

1.8 Assumptions

Other factors that are associated with hygiene practices like; environment, health system support, social status, competing responsibilities were assumed to be constant in this study.

1.9 Theoretical frameworks

1.9.1 Health Belief Models

A further well-studied model in the field of health behavior is the HBM, which Hochbaum and Rosenstock first presented in 1952. The goal of the HBM is to forecast behaviors related to health by using particular thinking patterns. An individual's reason for participating in a health activity can be categorized using three main areas: the possibility of acting, changing the environment, and personal views. An individual's impression of sickness is influenced by a number of factors, including perceived severity, perceived vulnerability, and the importance of health to them. Cues to action, perceived threat, and demographic traits are examples of moderating influences. The likelihood of acting is determined by subtracting the perceived barriers from the expected advantages of pursuing the advised course of action. Together, these elements produce a reaction that frequently reflects the chance that the activity will take place. (Sun & Okada, 2023)

The HBM states that at least three factors; general health values, which include interest in and health concern; specific health beliefs regarding vulnerability to a particular health threat; and beliefs about the consequences of the health problem influence how seriously an individual perceives a threat to their health in terms of personal health behaviour. If someone feels that their health is in danger, is constantly reminded to take action, and thinks that the advantages of taking preventive care outweigh the disadvantages, they are more likely to follow advised preventive health measures. (Jones et al., 2015)

According to Reynolds (1991) and (Zemon, 2015), the HBM has been used to improve knowledge of sexual risk-taking behaviour in individuals of different ages and cultural backgrounds. The ability of the HBM to predict the use of protection against sexually transmitted infections (STIs) during oral or sexual intercourse among sexually active adolescents and young adults has been studied in multiple studies (Brown et al., 1991; Mclean, & Brown 1997; Lin et al., 2015), and the results have shown support for the HBM in understanding safe sex behaviours. According to research, 43% of the heterogeneity in early adolescents' intentions for safe sex can be explained by the HBM (Petosa & Jackson, 1991). Moreover, Downing-Matibag and Geisinger (2018) showed how the HBM can be a useful paradigm for comprehending teenagers' evaluations of the sexual risk-taking in casual encounters that they take themselves and others.

Problem behavior theory

The causes and traits of problem behaviors, such as risky sexual behavior or alcohol consumption, can be explained by the issue behavior theory (Jessor, 2017; Jessor, 2018). Jessor (2019) defines issue conduct as any behavior that deviates from both social and legal norms. The behavior system, which consists of conflicting conventional and problem behavioral structures, the perceived environmental system, and the behavior system are the three systems of psychosocial factors that comprise the model (family and peer expectations), and the whole system of social cognitions, individual values, expectations, beliefs, and values that make up the personality. Socialization and demographic factors have an impact on an individual's personality and perception of the surrounding systems; these factors also have an indirect impact on behavior. It is thought that personality systems and perceptions of the environment have a more direct, immediate impact on behavior than socialization and demography.

The three PBT methods use distinct variables that either increase or decrease the possibility of the behavior occurring, such as unsafe sex, or impact the problem from occurring. The conventional and unorthodox behaviors of each individual are taken into account when projecting a problem behavior (Donovan, Jessor,

& Costa, 1991). Conventional behaviors are those that conform to social norms, according to Donovan et al. (1991), on the other hand, any behavior that deviates from social norms is considered unusual. Examining the typical and atypical behaviors found in each of the three psychosocial systems within an individual can help forecast their future behavior. Preliminary research supports this notion by demonstrating how a variety of factors might influence risky sexual practices. Protective traits like self-worth and intelligence, which are embedded in social and communal contexts, may have an impact on teenage decision-making (Norman & Turner, 2016).

The majority of research on PBT has either only considered one of the three systems or has examined each system separately (Davis, 2021). This indicates that if all three systems are not studied simultaneously, it will be challenging to forecast future behavior. Additionally, not all cultures respond well to PBT (Martin et al, 2021). This theory's foundation is that it applies to any group that participates in deviant behavior; yet, its development and research were initially carried out in a community made up of middle-class, white persons (Jessor, 2017).

But there are drawbacks to applying the HBM, and meta-analyses have produced contradictory findings about its efficacy (Taylor, 2018). An evaluation of HBM-based research conducted in the UK revealed insufficient data to substantiate the claim that these interventions have enhanced the nation's general health outcomes (Taylor, 2016). A meta-analysis of 18 studies indicated that perceived benefits and barriers were also the greatest predictors of behavior, though perceived severity was found to be weak (Taylor, 2018). Study proposed that rather than focusing on direct effects, future study should look at potential mediation and moderation amongst the HBM's essential elements. Nonetheless, an additional meta-analysis encompassing 18 researches examined treatments grounded in the Health Belief Model (HBM) to enhance health adherence.

Around 83% reported enhanced adherence. However, only six of the included research thoroughly examined the model (Martin et al, 2021). Teens' compliance with health recommendations to take oral contraceptives and undergo regular STI testing has been documented as a problem. As was previously mentioned, the Health Belief Model (HBM) can help identify adolescents who intend to engage in safe sexual behavior. Thus, it was evidenced that HBM may help explain the teenage sexual risk taking behavior even in spite of the critiques addressed here (Kaur, Suseela, 2020). The Health Belief Model's concepts serve as the foundation for a large body of research on preventive health behavior (Rosenstock, 1974). The Health Belief Model (HBM) aims to explain why people practice preventative health behaviors even when there are no visible indications of illness. Any action conducted by an individual with the intention of preventing disease, detecting disease at an asymptomatic stage, or enhancing health is referred to as a preventive health behavior (Kasl and Cobb, 1966; Rosenstock, 1974). The original purpose of HBM was to ascertain why particular individuals saw their physicians. Since then, HBM has been employed to predict behaviors such as doctor visits (Haefner and Kirscht, 1970), weight control (Sturhard, 1981), and food safety (Schafer et al., 1993).

According to Rosenstock's 1974 research, the fundamental tenet of health behavior modification (HBM) is that in order for a person to take preventative measures against disease, they must: (1) believe that they are personally susceptible to disease; (2) believe that the disease will occur at least moderately often throughout their lifetime; (3) act in favor of health by lowering their susceptibility to illness or, in the event that illness does occur, by lessening its severity; and (4) act without overcoming psychological barriers like shame and cultural taboos.

Susceptibility perceptions: People's opinions of their own susceptibility to sickness are thought to differ greatly. When examining people's perceptions of foodborne illness, for instance, one person may reject the potential of foodborne illness, while another may accept the possible statistics surrounding foodborne sickness while judging the probability that it was not caused by food to be low. Someone else might say they feel like they have a high chance of contracting a foodborne illness. An individual's susceptibility to an illness is defined as their risk. Because views of susceptibility depend on the preventive health practice and the related disease under study, perceptions of susceptibility differ amongst people.

Sensation of severity: The degree of disease is also seen differently by different people and even by the same person. Both the degree of emotional arousal elicited by an individual's awareness of the sickness and the individual's anticipated difficulties related to the illness certain diseases may cause can be used to determine the severity of an illness. The disease's intensity might also be sensed in terms of its clinical or medical repercussions. For instance, does a foodborne sickness result in death or does it merely temporarily incapacitate the victim?

However, some people may base their assessment of the seriousness of their condition by how it affects their social, familial, and/or professional lives. An individual is highly susceptible, and their level of understanding is typically strongly influenced by the severity of their sickness. This clarifies the variations in how each person views disease. An individual's perspective can be altered by learning about illness (Haefner and Kirsch, 1970). 18 Perceived Advantages and Disadvantages of Acting It is claimed that beliefs about one's susceptibility to illness and the seriousness of that illness have an impact on medical treatment. The course of action is not, however, determined by these perceptions.

Moreover, an individual's perceptions of the availability and efficacy of medical intervention—rather than objective facts regarding the intervention's efficacy—will influence the course of action. An individual's perceptions of the benefits of preventive health behaviors will also be influenced by the norms and pressures of the social groups with which they identify. An action may be considered beneficial if it is perceived to reduce susceptibility or severity of contracting a disease.

Negative perceptions hinder action by making the person feel uncomfortable; if they are highly willing to act, negative perceptions will be perceived as relatively low. If a person feels susceptible to foodborne illness and severe foodborne illness, they are more likely to avoid eating raw meat or to discard food that has been left at room temperature for an extended period of time. On the other hand, an individual may believe that a behavior will be effective in reducing the risk of disease, but at the same time, they will perceive that behavior as inconvenient, expensive, unpleasant, painful, or unpleasant. He may, however, be less likely to follow safe food handling procedures if he is unaware that he is prone to foodborne illness and that the illness is not serious. HBM suggests that when an individual is aware of the connection between good hand hygiene and a lower risk of foodborne illness and that awareness is consistent with accurate information, the individual will be strongly oriented toward action to lessen the likelihood of or the impact of a perceived hazard from foodborne illness.

People are quite likely to take steps to lessen the possibility or effect of a perceived foodborne illness hazard. Stimulus (or trigger to action): A person may believe that they are prone to illness, believe that the illness is serious, and believe that they need to take action. Health activity is good, but it might not be effective. In an effort to get people to see a doctor, Haefner and Kirscht (1970) presented information concerning specific health issues. In addition to showing that it is possible to change people's perceptions of the threat posed by disease that is, that it is the combination of perceived susceptibility and disease severity as well as the perceived effectiveness of professional intervention that moves a person to action

this study also shows that modification can predictably lead to changes in behavioral health problems. Specifically, significantly more people exposed to such messages visited a doctor for check-ups in the 8 months following the experimental manipulation than the control group not exposed to these messages.

In theory, interventions promoting hand hygiene could encourage people to take more action. An intervention is considered effective if it alters these perceptions to the point where it motivates the individual to practice good hand hygiene. Historically, HBM has only been used to examine the disease under evaluation and general health. Becker et al. (1974) and Langile (1977) recognized health value as a modifiable variable because it reflects variations in the degree of general health concern. It is thought that individuals with high health values are more likely to take action.

"Perceived internal locus of control over health," or "helplessness," was another moderating factor. "Insiders" are those who think they have influence over their circumstances; "outsiders" are those who think fate, luck, chance, or other strong persons govern their circumstances. Research has demonstrated that trainees participate in activities that promote physical well-being. It has been demonstrated that a particular kind of education interacts with the locus of control to influence results. While the majority of research indicates that interventions should be tailored to each person's unique range of control, the experimental groups in this study did not perform appreciably better than the control groups (Williams, 1972).

CHAPTER TWO
LITERATURE REVIEW

2.0 Introduction

These chapters comprised of theoretical frameworks, Empirical frameworks, Critical Literature Reviews and the Conceptual frameworks. In addition, the conceptual frame work summary is provided.

2.1: Theoretical Literature Review.

The best way to ensure a baby's normal growth and development is to breastfeed. When nursing, proper cleanliness is crucial since it helps to keep the infant healthy. The most natural food for the newborn is breast milk. The early years of a baby's life are a time when their immune system is developing, and it provides the nutrients and antibodies the newborn needs to help them grow and fight disease and infection. Before every feeding, good cleanliness should be practiced to prevent the spread of pathogens to the infant (UNICEF, 2015).

In order to promote the best possible growth, development, and health of children, WHO has ruled that feeding bottles with nipples should never be used (WHO, 2017). Despite this, bottle feeding infants continues to be popular due to a variety of social and cultural factors. Compared to children who are not bottle fed, children who are bottle fed have an increased chance of developing diarrhea. For this reason, feeding bottles should always be sanitized before use (UNICEF, 2018c and UNICEF, 2019b).

Mothers who neglect to properly clean their breasts and nipples expose their children to a number of illnesses and infections. Fever, diarrhea, vomiting, and appetite loss are a few of the diseases and frequent ailments that can develop as a result of a child sucking on filthy breasts.(Birhanu et al., 2023)

The baby may suffer from cracked nipples or any nipple infection. The majority of breastfeeding mothers who use MCH at MCRH, Mandera East do not prepare their breasts for nursing. Due to Kenya's cultural practice of sexualizing breasts, most of them are timid and unable to clean their animals in public before feeding the baby. Due to the shortage of taps with clean flowing water at the hospital's MCH unit, the majority of them do not wash their hands before feeding their newborns. Some of the women can

breastfeed their infants without washing their hands after using the restroom. Most women don't wash their hands after changing the baby's diapers and can start breastfeeding right away. This is a result of ignorance, a lack of knowledge, and sloth. The moms who attend MCH in the hospital are mostly from low-income families and lack education, thus they are unaware of how crucial it is to practice good hygiene when nursing (Sahoo et al., 2021)

Most breast-feeding mothers have a positive attitude towards adopting new behaviors in order to minimize health risks to their babies and are open to learn hygienic practices they can adopt to improve the health of their children (Gupta et al., 2018) Mother's inadequate knowledge towards breastfeeding may influence practices and constitute barriers to proper hygienic practices among nursing mothers. (Gupta et al., 2018) Most breastfeeding mothers wear the wrong type of bras that have materials that do not allow breasts to breathe. Most of them do not know the importance of cotton bras which is drying quickly, letting the skin breath and preventing growth of harmful bacteria.

The greatest method of feeding a newborn is by breastfeeding, however women must adhere to particular hygienic precautions to keep the baby healthy (Taddese et al., 2020).

Greater than 10 million children die yearly, commonly from the preventable diseases including diarrhea, malaria, and measles, according to UNICEF. These factors include the child's food, the quality of the water, and the cleanliness of objects (UNICEF, 2017b).

The age of the kid and the season have a big impact on the prevalence of diarrheal illnesses. The incidence is highest in 1st two years of life, making the younger children most susceptible. (Kakute.P.N..Ngum 2015; Donna Murray 2017; Martin et al, 2021). To save their children from the risk of diarrhea, breastfeeding mothers should practice strict cleanliness standards.In an effort to reduce baby diarrheal morbidity, encouraging good infant feeding habits and enhancing environmental cleanliness have been two key measures. Numerous researchers have found link between breastfeeding and non-communicable diseases number. Breast swelling alone or in conjunction with an infection is known as mastitis, a common issue with nursing. Up to 20% of breastfeeding mothers are impacted. It may be caused by germs, infections, or other pathogens that enter the body through cracked nipples. Mastitis can also result from wearing a tight bra or a nursing bra that doesn't fit properly. By often replacing breast pads to stop bacterial growth, it can be avoided (Zaltron, 2017)

2.2: Behavioral Change Model

A behavioral model, in the context of psychology and behavior analysis, refers to a theoretical framework or approach that seeks to explain and understand human behaviors based on the observable actions and interactions with environment. Behavioral models focus on studying the relationship between stimuli (events or circumstances) and responses (behaviors) without necessarily delving into internal mental processes. This approach emphasize on importance of environment and learning experiences in shaping behavior. (*B.F. Skinner, 2021,* "Science and Human Behavior")

One of the prominent figures associated with the development of behavioral models is B.F. Skinner. He was a pioneering psychologist and behaviorist who formulated the theory of operant conditioning, which is a fundamental concept within behavioral psychology. Skinner's work emphasized the role of reinforcement and punishment in shaping behavior. He conducted extensive research using controlled laboratory experiments with animals, particularly pigeons and rats, to investigate how behaviors are acquired, maintained, and modified through various environmental contingencies. *(B.F. Skinner, 2021*)

Skinner's ideas and research laid the foundation for the behavioral perspective in psychology, which has had a significant influence on fields such as education, therapy, and behavioral interventions. It's important

to note that while Skinner's work is a cornerstone of behavioral psychology, there have been other important contributors to the field as well, each adding to the understanding of behavior and its underlying mechanisms. *(B.F. Skinner, 2021*)

In the context of hygiene practices, behavioral models can provide insights into understanding and promoting behaviors related to cleanliness, health, and sanitation. B.F. Skinner's operant conditioning, a key element of behavioral models, can be applied to encourage and reinforce hygienic behaviors. Here's how:

Positive Reinforcement: Positive reinforcement involves providing rewards to increase the likelihood of a behavior occurring. In the context of hygiene practices, individuals can be positively reinforced for behaviors like washing their hands before their meal or after use of restrooms. For example, parents might offer praise or small rewards to their children for consistently practicing good hygiene.

Negative Reinforcement: involves avoiding or removing aversive stimulus to increase likelihood of behavior. An example could be using hand sanitizer to avoid the discomfort of germs on hands after touching surfaces in public places.

Punishment: While punishment is generally not the preferred approach in behavioral models, mild forms of punishment could be used to discourage unhealthy hygiene behaviors. For instance, people might be less likely to touch their face if they experience a mild, harmless discomfort after doing so.

Extinction: Extinction involves withholding reinforcement to decrease the occurrence of a behavior. If someone frequently fails to wash their hands before eating and receives no positive attention from doing so, the behavior might diminish over time.

Modeling and Observational Learning: Behavioral models also consider observational learning, where individuals learn by observing the actions and consequences of others. Public health campaigns and educational programs that showcase proper hygiene practices and their positive outcomes can influence people to adopt similar behaviors.

Behavioral contracts and goal setting: Setting goals and creating behavioral contracts can be effective ways to promote hygiene practices. Individuals can commit to specific hygiene behaviors and receive rewards upon successful completion.

Social norms and peer pressure: Behavioral models recognize the impact of social norms and peer pressure on behavior. Public messaging that emphasizes the prevalence of healthy hygiene practices within a community can encourage individuals to conform to these norms.

2.3: Social Cognitive Theory (SCT)

Social Cognitive Theory, formulated by Albert Bandura in response to the limitations of behaviorist perspectives, offers a nuanced understanding of human behavior. Central to this theory is the concept of observational learning, wherein individuals acquire new behaviors by observing others. The process extends beyond direct interactions, encompassing influences from media sources. Bandura introduced the idea of reciprocal determinism, underscoring the dynamic relationship between personal factors, the environment, and behavior. This bidirectional interaction posits that individuals actively shape their environments through their actions. Self-efficacy, a pivotal element, refers to one's belief in their ability to execute specific behaviors successfully. The theory also emphasizes vicarious reinforcement, whereby individuals are influenced by observing the consequences of others' actions. Social Cognitive Theory finds applications in diverse domains. In education, teachers can leverage modeling techniques to foster positive learning environments. Health campaigns utilize the theory to promote healthier lifestyles by showcasing positive behaviors and enhancing individuals' self-efficacy. In criminal justice, the theory helps unravel

the acquisition of criminal tendencies through exposure to deviant influences. Despite its contributions, critiques suggest that the theory may oversimplify human behavior and overlook biological influences. Nonetheless, by illuminating the intricate interplay between individuals, cognition, and the environment, SCT remains a valuable framework for understanding and influencing human behavior across multiple disciplines.

2.4: Transtheoretical Models

Transtheoretical Models (TTM) are a family of psychological theories that have significantly contributed to the understanding and facilitation of behavior change. The foundation of TTM was laid by James O. Prochaska and Carlo C. DiClemente in the late 1970s, arising from their research on smoking cessation. One of the distinguishing features of TTM is its acknowledgment that behavior change is a dynamic and non-linear process. The model recognizes that individuals may cycle through different stages when contemplating and making changes in their behavior, and this cyclical nature sets TTM apart from more linear models of change.

The six stages in the TTM offer a structured framework to describe an individual's readiness to change. In the precontemplation stage, people may be unaware of the need for change, while the contemplation stage marks the acknowledgment of a problem or the consideration of altering behavior. Planning for change is part of the preparation stage; putting particular behavior modification methods into practice is part of the action stage; and maintaining the changed behavior over time is the emphasis of the maintenance stage. The termination stage, while not always applicable, denotes the time at which the new habit has become so ingrained that there is little chance of a return.

One of the strengths of TTM lies in its ability to integrate principles from various therapeutic approaches. It is considered a "transtheoretical" model precisely because it transcends specific theoretical orientations. Instead, it incorporates elements from cognitive-behavioral therapy, motivational interviewing, and other psychotherapeutic approaches, making it adaptable to a wide range of behavioral challenges.

The application of TTM is evident in numerous domains. From smoking cessation and weight management to substance abuse treatment and mental health interventions, TTM has been utilized to tailor interventions according to an individual's stage of change. For instance, someone in the precontemplation stage might benefit more from interventions that raise awareness and highlight the need for change, while someone in the action stage may require strategies to overcome obstacles and maintain progress.

By offering a comprehensive understanding of the dynamic process of behavior change, Transtheoretical Models provide a valuable tool for practitioners and researchers. The emphasis on individualized interventions based on the specific stage of change enhances the effectiveness of behavioral interventions, promoting sustainable transformations in individuals' lives across a spectrum of contexts and challenges.

2.5: Empirical Literature Review

An empirical literature review is a critical and systematic examination of existing research studies, articles, and academic literature that are based on direct observation or experimentation. It aims to summarize, evaluate, and synthesize the findings, methodologies, and conclusions of these studies to gain a comprehensive understanding of a particular research topic or area. Through this process, researchers can identify gaps, inconsistencies, and trends in the existing body of knowledge, which then informs the development of new research questions, hypotheses, and methodologies.

The empirical literature review serves as a foundational component of scholarly research and academic inquiry. Its significance lies in its ability to provide researchers with a solid framework for advancing knowledge, making informed decisions, and contributing meaningfully to their respective fields.

In essence, an empirical literature review bridges the gap between what is already known and what is yet to be explored. It enables researchers to engage in scholarly dialogue, contribute new insights, and drive the progress of knowledge within their chosen fields. Through a comprehensive review of relevant studies, researchers can lay a solid groundwork for their own investigations, ensuring that their research aligns with current knowledge and contributes to the ongoing advancement of academic thought.

2.6: Global Perspective of Hygiene Practices Among Breast Feeding Mothers

There are approximately 525,000 deaths worldwide each year from infectious diseases, including childhood diarrhea, out of 1.7 billion cases that have been reported. South Asia and sub-Saharan Africa have the highest mortality rates among children under the age of two (Jiwok et al., 2021). Diarrheal diseases linked to the contamination of complementary foods cause 230,000 deaths annually (Jones, A.D.; Ickes, S.B.; Martin et al, 2021). Feeding contaminated complementary foods is directly linked to malnutrition, which is the root cause of 45% of deaths in children under the age of five (Jiwok et al., 2021). A child's risk of dying before turning five years old is influenced by a number of factors, including poor hygiene, the home environment, toilet facilities, cooking fuel, availability of refrigeration, drinking water, and household members (Bizzego et al., 2022). Disturbingly, diarrheal diseases account for eighty-eight percent of child deaths, and these can be avoided by expanding access to WASH services (Mebrahtom an al., 2022).

2.7: African Context of Hygiene Practices Among Breast Feeding Mothers

Epidemiological data suggests that the transmission of diarrheal diseases through food may be more significant than through waterChildren under the age of five are thought to bear 40% of the burden of foodborne diseases in African nations. Studies suggest that contaminated complementary foods may be the source of at least 70% of the pathogens linked to diarrhea in children. Over 30% of children under the age of five in Africa suffer from various microbial pathogen diseases.

There is scientific evidence that the growth, development, and survival of infants and children are significantly impacted by inadequate hygiene practices during complementary food feeding. For example, a study conducted in Malawi found that 27% of 6 to 24 month old children had diarrhea in the two weeks after the start of complementary feeding, which resulted in an 80% reduction in height and growth rate and 20% underweight. Three studies conducted in rural India also showed a 25% to 50% prevalence of child stunting.

A study conducted in Malawi revealed that the prevalence of diarrhea in children under five years old was 43.4%. Of those children, 45.5% had their mothers preparing food on the floor; this was higher than the prevalence among those whose mothers used a table, 40.7%, and 48.2% when they used only water. Forty-three percent of mothers used soap and water for handwashing. It was suggested that maintaining basic hygiene and handwashing during complementary food preparation could reduce the spread of germs and prevent skin infections, acute respiratory infections like influenza, and diarrhea (Moncion et al., 2019).

2.8: East African Context Of Hygiene Practices Among Breast Feeding Mothers.

As per the 2019 Mini Demographic and Health Survey in Ethiopia, 13% of mothers and babies receive complementary feeding (CF), and 43% of infant deaths are caused by avoidable bacterial pathogens. One of the main causes of diarrhea is poor food hygiene. Good CF practices include preparing complementary foods as hygienically as possible, making sure that there is enough food available at home, and implementing nutritional knowledge among caregivers. Research has shown that diarrheal diseases are more common after the introduction of contaminated complementary foods that introduce pathogenic microorganisms. (Gizaw et al., 2017).

In Ethiopia, preventing and managing foodborne infections in children aged 6-24 months involves an understanding of the hazards associated with hygiene procedures in complementary food feeding. Unfortunately, there are frequently barriers to putting these requirements into reality in Ethiopia, which exacerbates the problem of actual hygienic practices in complementary food feeding and has detrimental effects on health. To lower child morbidity and death, researchers advise evidence-based public awareness campaigns on inadequate supplemental food feeding practices and better access to health education for caregiver mothers. Few research have been done on the extent and related variables of complementary food feeding hygienic practices among Ethiopian mothers of infants between the ages of six and twenty-four months. Reducing child morbidity and death is greatly aided by improving food hygiene standards. But the variables that contribute to inadequate hygienic practices for feeding supplemental foods are not adequately addressed, which emphasizes how crucial it is to give vulnerable age groups accurate information. Therefore, the purpose of the current study is to evaluate the degree and related variables of complementary food feeding hygienic practices among women in the Tegedie District, Northwest Ethiopia, who have infants between the ages of 6 and 24 months (Demmelash et al., 2020).

2.9: Kenyan Context of Hygiene Practices Among Breast Feeding Mothers

Significant global health concerns are posed by inadequate sanitation, hygiene, and access to safe drinking water, which results in the annual deaths of many children under the age of five, mostly from diarrheal diseases. The purpose of this study was to evaluate the effects of improving mothers' and children's health through sanitation and hygiene in Turkana District, one of Kenya's dry northern frontier districts. In a baseline survey done in 2007 and a post-intervention survey conducted in 2008, a total of 300 mothers were randomly interviewed using a repeat cross-sectional study design with a multi-stage sampling approach. Surveys were used to gather data, which SPSS was used to analyse using statistical tests such as regression, cross-tabulations, and frequencies.

The results showed that homes with handwashing soap, trash pit ownership, and handwashing routines had significantly improved. The purpose of the study was to understand how measures related to sanitation and hygiene affect certain health outcomes, specifically the incidence of diarrheal illnesses in children in Turkana District, Kenya. A capacity-building and empowerment strategy was used in the interventions, which motivated communities to push for better sanitation and hygiene facilities (Amadu et al., 2023).

2.10: Mandera County Context of Hygiene Practices Among Breast Feeding Mothers

In Mandera County, the characteristics of households reveal a high level of illiteracy among caregivers, with 82.3% having no formal education, and a majority being housewives (53.6%). The average household size is notably high at 5.3 members, exceeding the national average reported in the KDHS 2014.

Young mothers often face challenges in disregarding advice from their less-educated elders (Nandagire et al., 2019). The primary sources of child feeding information for most caregivers are unskilled, primarily coming from their mothers or mothers-in-law and Community Health Volunteers. Due to a lack of knowledge about suitable foods for young children, coupled with cultural beliefs and practices, caregivers may not optimize the nutritional value of the available food in their households (Motebejana et al., 2022). Furthermore, women's literacy and numeracy skills acquired through education contribute to their ability to recognize illness and seek appropriate treatment for their children. Inadequate feeding practices during the complementary feeding period are expected to bring adverse effects on child health, emphasizing the necessity of educational interventions on infant and young child feeding (Nandagire et al., 2019).

2.11: Hygiene, Awareness Among Breastfeeding Mothers.

Most breast-feeding mothers have a positive attitude towards adopting new behaviors in order to minimize health risks to their babies and are open to learn hygienic practices they can adopt to improve their children health (Dukuzumuremyi et al., 2020). Mother's inadequate knowledge towards breastfeeding may influence practices and constitute barriers to proper hygienic practices among nursing mothers. Most mothers attending MCH at MCRH are uneducated; they have low standards of livelihood. They lack knowledge on hygiene factors such as hand washing after changing the baby's diapers and hygiene practices such as Use of the right medium for breast hygiene e.g., not using soap or lotion on nipples, using nursing pads and changing them frequently(Zaltron, 2017)

Most breastfeeding mothers wear the wrong type of bras that have materials that do not allow breasts to breathe. Most of them do not know the importance of cotton bras which is drying quickly, letting the skin breath and preventing growth of harmful bacteria (Zaltron, 2017)

2.12: Major Factors-Cultural, Economic and Family background

When measuring hygiene practices among breastfeeding mothers, several major factors can influence and shape these practices. Economic, cultural, and family background are key indicators that should be considered and measured to gain comprehensive knowledge of context and determinants of maternal hygiene practices. Economic Factors: Access to Sanitation and clean water: Measure the accessibility and availability of clean water sources and sanitation facilities for breastfeeding mothers and their families. This can include assessing the distance to water sources, availability of soap, and hygiene-related infrastructure.

Hygiene Products: Assess the affordability and availability of hygiene products such as sanitary pads, soap, detergent, and breastfeeding equipment (if applicable) for different economic groups. Nutritional Resources: Evaluate the economic conditions that impact the availability of nutritious food for mothers, as proper nutrition contributes to overall hygiene and health (Felice et al., 2017). Cultural Factors: Cultural Beliefs and Practices: Conduct qualitative research, surveys, or interviews to explore the cultural beliefs and practices that influence hygiene practices. Understand how traditional customs, taboos, and rituals impact postpartum and breastfeeding hygiene. Menstrual Hygiene: Investigate how cultural norms and perceptions affect menstrual hygiene practices and access to sanitary products. Breastfeeding Practices: Explore cultural attitudes towards breastfeeding, including beliefs about breastfeeding hygiene, nipple care, and breastfeeding in public. Family Background: Social Support: Measure the level of support from family members, partners, and extended family in promoting and facilitating proper hygiene practices. This can include involvement in caregiving, access to hygiene resources, and emotional support. Educational Background: Assess the education levels of breastfeeding mothers and their families, as higher education levels may correlate with better understanding and adoption of hygiene practices. Economic Status: Examine the socioeconomic status of the family, including income levels, occupation, and household resources, as these factors can influence access to hygiene resources. (Wanjohi et al., 2016)

2.13: Socio-cultural factors influencing hygiene practices among breastfeeding mothers.

Cultural taboos and precepts may be detrimental to breastfeeding habits. According to a study conducted in Cameroon, there are cultural and traditional behaviors and beliefs that motivate mothers to use mixed feeding. These include family pressure to supplement because it is believed that breast milk is inadequate and does not improve an infant's weight. In Kenya, there is a widely held idea that feeding infants younger than six months old exclusively by breastfeeding is insufficient. This led to supplementing, with 36% of infants fewer than six months receiving free meals as a result. High standards of hygiene should be

followed by the mother when additional foods are provided in order to enhance the baby's health. The mother should wash her hands with soap and warm water, and sanitize the feeding supplies.

2.14: Socioeconomic Factors on Hygiene Practices Among Breastfeeding Mothers.

Income and Economic Status: The economic situation of families can impact their ability to afford hygiene products, clean water, and nutritious food. Lower-income households might face challenges in accessing necessary resources for maintaining good hygiene. Education: Maternal education can influence hygiene practices. Mothers with higher levels of education might be more aware of the importance of hygiene and have better access to health-related information. Access to Sanitation and Clean Water; accessibility and Availability of clean water sources and proper sanitation amenities are crucial for maintaining hygiene practices. Limited access to clean water can hinder proper hygiene routines. Hygiene Products: The ability to afford and access hygiene products such as soap, sanitary pads, and cleaning supplies can impact the hygiene practices of breastfeeding mothers. Healthcare Access: Healthcare services accessibility and availability, including postnatal and antenatal care, may influence the guidance and education mothers receive about hygiene practices. Employment and Occupation: Mothers' employment status and working conditions can affect their ability to practice good hygiene, especially during breastfeeding breaks. Social Support: The presence of a supportive social network, including family members and community members, can influence hygiene practices by providing assistance, advice, or resources. Cultural Factors: Cultural beliefs and norms may shape hygiene practices. Understanding cultural practices related to postpartum care and breastfeeding can provide insights into hygiene behaviors. Household Infrastructure: The physical condition of housing and household infrastructure can impact hygiene practices. Adequate facilities for personal hygiene are important for maintaining cleanliness. Food Security: Access to nutritious food is essential for maintaining overall health and hygiene, especially for breastfeeding mothers. (Darin-Mattsson et al., 2017).

2.15: Individual Factors associated with hygiene among breastfeeding mothers.

Individual personal factors influencing hygiene practices among breastfeeding mothers in Mandera East Sub-County, Mandera County, Kenya, can have a significant impact on how mothers' approach and prioritize hygiene during breastfeeding. These factors can vary widely and may influence the choices and behaviors of breastfeeding mothers. Here are some potential individual personal factors to consider: Knowledge and Awareness: Mothers' understanding of the importance of hygiene practices during breastfeeding plays a critical role. Knowledge about proper handwashing, breast hygiene, and storage of breast milk can influence their behavior. Attitudes and Beliefs: Personal attitudes and cultural beliefs about hygiene, breastfeeding, and postpartum practices can shape a mother's approach to hygiene.

Positive attitudes towards cleanliness and health may lead to more consistent hygiene practices. Self-Efficacy that is confidence in one's ability to practice proper hygiene, especially during breastfeeding, may influence their behaviors. Mothers with greater self-efficacy can be more proactive in maintaining hygiene practices. Health Literacy: The ability to understand health information and apply it to one's own situation affects hygiene practices. Mothers with higher health literacy may better comprehend the importance of hygiene and follow recommended practices. Time Constraints: The availability of time and the demands of caregiving and household responsibilities can impact a mother's ability to dedicate time to proper hygiene practices.

Personal Hygiene Habits: General personal hygiene habits, such as handwashing frequency and cleanliness, can extend to hygiene practices during breastfeeding. Motivations and Goals: Personal motivations, such as the desire to ensure the health and well-being of the infant, can influence a mother's

commitment to practicing good hygiene. Cultural and Social Norms: Individual adherence to cultural norms, such as postpartum practices and traditional beliefs, can guide hygiene behaviors. Prior Experience: Previous experiences with breastfeeding and hygiene practices may influence a mother's approach with subsequent pregnancies. Psychological and Emotional Factors; psychological and emotional well-being factors, such as anxiety and stress may impact a mother's ability to prioritize and maintain hygiene practices.

Access to Resources: Individual access to clean water, hygiene products, and proper sanitation facilities affects a mother's ability to carry out recommended hygiene practices. Support System: The presence of a supportive partner, family members, or friends who encourage and assist with hygiene practices can play a role. Coping Strategies: Personal strategies for coping with challenges or barriers to hygiene practices can affect a mother's behavior. When conducting research on individual personal factors that influence hygiene practices among breastfeeding mothers in Mandera East Sub-County, qualitative methods such as interviews and focus groups can be valuable in exploring these factors in-depth.

2.16: Barriers To Hygiene Practices, Global, Africa, East Africa, Kenya, And Mandera.

Despite the benefits of maintaining cleanliness while breast feeding that have been extensively documented, many moms fall short of their own expectations due to a variety of causes. One of the challenges for breastfeeding women to practice good hygiene is poverty and low living circumstances. Remote Indigenous Communities' high degrees of social, economic, and environmental adversity are to blame for their health issues. Only between 38% and 69% of homes in rural indigenous communities in Australia had all the functional elements needed to carry out healthy living practices, such as the ability to cook and store food, wash people, and have a working toilet(Rah et al., 2015). Breastfeeding mothers living under such standards of living are likely not to observe proper hygiene. Some breastfeeding mothers attending MCH in MCRH are single mothers therefore they are the breadwinners in their families hence they lack enough time to observe hygiene practices such as sterilization of baby's feeding equipment's. Lack of knowledge on proper hygiene, inadequate access to clean and safe water, Ignorance and forgetfulness are also some barriers to observing hygiene among breastfeeding mothers (Rah et al., 2015)

2.17: Health effects associated with Hygiene practices among breastfeeding mothers

The greatest method of feeding a newborn is by breastfeeding, however women must adhere to particular hygienic precautions to keep the baby healthy (,WHO 2020). Every year, almost 10 million children may away, primarily from diseases that could be prevented. including diarrhea, malaria, and measles, according to UNICEF. These factors include the child's food, the quality of the water, and the cleanliness of objects (UNICEF, 2018). The age of the kid and the season have a big impact on the prevalence of diarrheal illnesses. The youngest children are most vulnerable because the incidence is highest during the first two years of life (Demmelash et al., 2020). To save their children from the risk of diarrhea, breastfeeding mothers should practice strict cleanliness standards.(Demmelash et al., 2020)

In an effort to reduce baby diarrheal morbidity, encouraging good infant feeding habits and enhancing environmental cleanliness have been two key measures. Breast swelling alone or in conjunction with an infection is known as mastitis, a common issue with nursing. Up to 20% of breastfeeding mothers are impacted. It may be caused by germs, infections, or other pathogens that enter the body through cracked nipples. Mastitis can also result from wearing a tight bra or a nursing bra that doesn't fit properly. By often replacing breast pads to stop bacterial growth, it can be avoided (Kaur, Suseela, 2020).

2.18: Critical Review to Establish Gaps for This Study,

A critical review of a study aiming to establish gaps in factors associated with hygiene practices among breastfeeding women attending MCH services, Mandera County Referral Hospital would involve evaluating various aspects of the study design, methodology, and potential limitations. Critical review of the study would assess its strengths and weaknesses in terms of research design, methodology, analysis, ethical considerations, and contextual relevance. This review process helps ensure that the study's findings are robust, credible, and valuable for informing both academic understanding and practical interventions related to hygiene practices among breastfeeding mothers attending the MCH services at Mandera County Referral Hospital.

Conducting hygiene promotion research can be challenging due to various factors, both logistical and contextual. These challenges can impact the design, implementation, and interpretation of research findings. Here are some global challenges associated with conducting hygiene promotion research: Cultural Diversity: Hygiene practices are deeply rooted in cultural norms and beliefs. Researchers must navigate diverse cultural contexts and ensure that interventions and research methodologies are culturally sensitive and acceptable. Language and Communication: Conducting research in different languages can pose communication barriers, affecting data collection and participant engagement. Translation and interpretation services may be required.

Access to Remote Areas: In many regions, especially rural or remote areas, access to communities and participants can be challenging due to inadequate infrastructure, transportation, and communication facilities. Limited Resources: Hygiene promotion research often takes place in resource-constrained settings where funding, equipment, and qualified personnel may be limited. Researchers must find innovative ways to maximize resources. Data Collection Challenges: Collecting accurate and reliable data on hygiene practices, particularly those that involve personal behaviors, can be challenging due to social desirability bias and recall errors.

Participant Engagement: Engaging participants in hygiene research can be difficult, especially if the interventions require behavior change. Motivating individuals to adopt new practices and sustain them over time is a complex process. Ethical Considerations: Respecting cultural norms, ensuring informed consent, and protecting participant privacy can be complex in cross-cultural research. Ethical standards may vary, and obtaining consent may require different approaches. Gender Dynamics: Hygiene practices are often influenced by gender roles and norms. Research must consider how gender dynamics impact participation, behavior change, and data collection.

Long-Term Sustainability: Ensuring that hygiene practices are sustained beyond the research period is a challenge. Developing interventions that lead to lasting behavior change is essential but can be difficult to achieve. Measuring Behavior Change: Accurately measuring behavior change, especially in the context of hygiene practices, can be challenging. Objective measurement methods may be needed to complement self-reported data. Data Analysis Complexity: Analyzing hygiene promotion data can be complex due to the interplay of individual behaviors, community factors, and cultural influences. Appropriate statistical and qualitative analysis methods are needed. Government and Policy Context: Research findings may need to align with local policies and priorities, which can influence the design and implementation of hygiene promotion interventions.

Health Infrastructure: Research may take place in areas with inadequate healthcare infrastructure. Collaborating with local health systems and organizations is crucial for successful implementation. Changing Sociopolitical Conditions: Political instability, conflicts, and other sociopolitical factors can

disrupt research activities and impact the safety of researchers and participants. Global public health Crises like pandemics may disrupt research timelines, data collection, and participant engagement, highlighting the need for flexible research approaches.

Overcoming these challenges requires careful planning, collaboration with local stakeholders, adaptation of research methodologies, and a deep understanding of the local context. It is essential to prioritize cultural sensitivity, community engagement, and sustainable solutions when conducting hygiene promotion research in diverse global settings. After critically reviewed, I found that this study is essential for preventing diseases, improving health outcomes, and promoting overall well-being. It empowers communities, informs policies, and contributes to global efforts in achieving better public health and sustainable development.

2.19: The conceptual framework

Independent Variables **Dependent Variable**

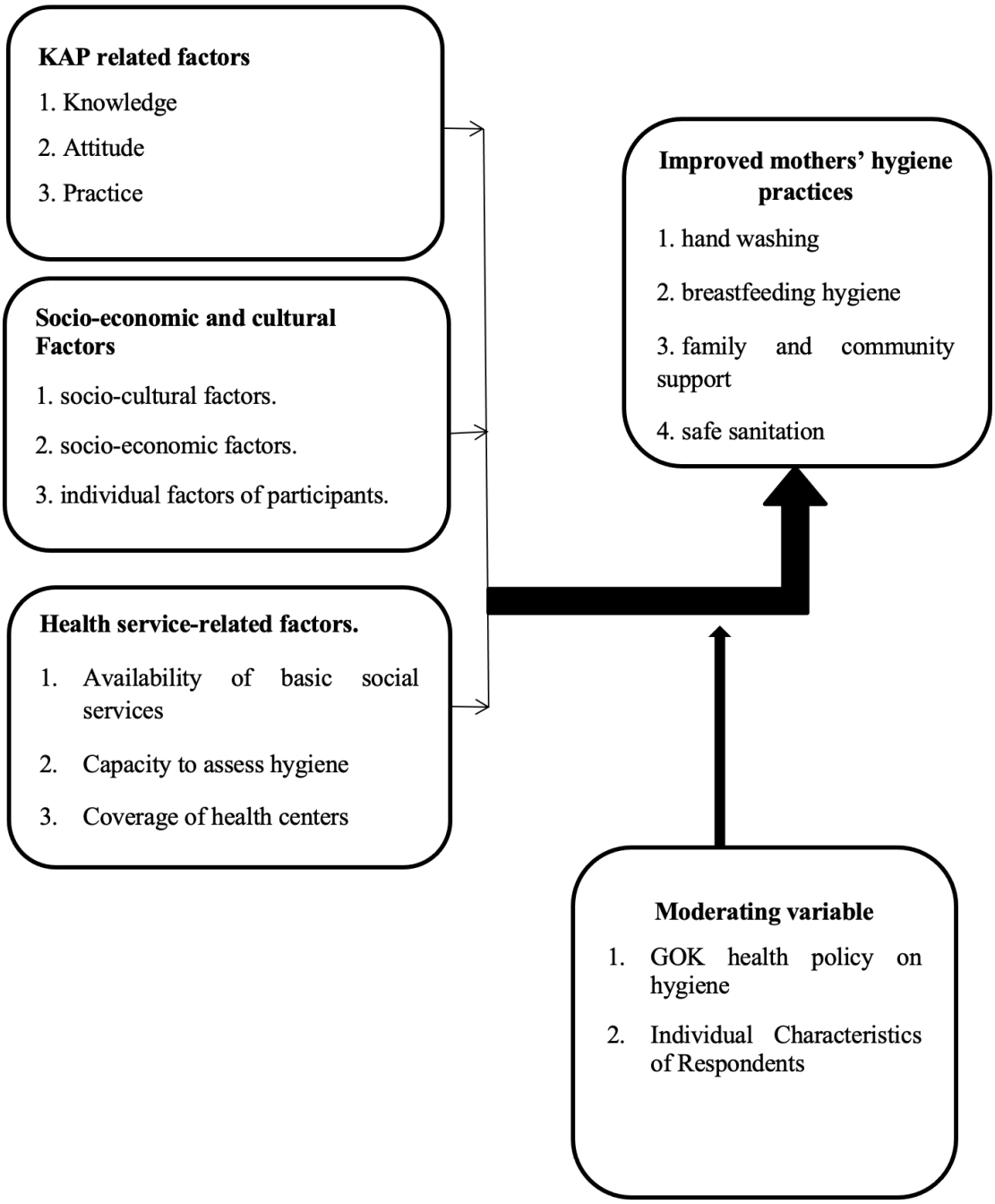

Figure 1: Conceptual Framework

A conceptual framework is a critical tool in research, especially when investigating complex phenomena like factors associated with hygiene practices among breastfeeding mothers. The study context focused on women attending the MCH, Mandera County Referral Hospital, Kenya. A conceptual framework offers several important benefits: Guidance for Research Design: A conceptual framework provides a structured outline for your research design. It helps you identify the key variables, relationships, and interactions that you intend to study.

This clarity ensures that your research is focused and well-defined. Theoretical Foundation: A conceptual framework allows you to draw upon existing theories and concepts that explain hygiene practices and related factors. This theoretical foundation gives your study depth and credibility by situating it within a broader academic context. Hypothesis Development: The framework assists in formulating hypotheses or

research questions. By identifying the relationships between variables, you can generate informed hypotheses about how different factors influence hygiene practices among breastfeeding mothers. Identification of Variables: It helps you identify the specific factors that could impact hygiene practices. These factors could include socio-economic status, cultural norms, access to resources, health beliefs, and more. Focus on Key Factors: With a conceptual framework, you can prioritize the most relevant and influential factors for your study. This prevents you from collecting unnecessary data and ensures your research is efficient.

Data Collection and Analysis: The framework guides your data collection by suggesting which variables to measure and how to operationalize them. It also aids in organizing and analyzing collected data, making the process more coherent. Interpretation of Findings: When you have a conceptual framework in place, interpreting your research findings becomes more systematic. You can relate your results back to the relationships and interactions you identified, enhancing the depth of your analysis. Applicability of Results: A well-constructed framework ensures that your findings have practical implications. The insights you gain can be applied to targeted interventions development, policies or programs to improve hygiene practices among breastfeeding mothers.

Communication and Collaboration: A conceptual framework facilitates communication with fellow researchers, advisors, and stakeholders. It's a visual representation that helps others understand the scope and focus of your study. Future Research and Theory Development: Your conceptual framework can contribute to the advancement of knowledge in the field. It can serve as a basis for future research, potentially leading to the development or refinement of existing theories. In summary, a conceptual framework is a roadmap that guides your research process, from the formulation of research questions to the interpretation of results. It provides a clear structure for understanding the complex web of factors that influence hygiene practices among breastfeeding mothers and ensures that your study is grounded in theory, well-organized, and meaningful in its contributions to knowledge and practice

2.20: Summary of the Conceptual Framework

This section situates the study as already shown in Figure 1, the conceptual framework and articulates how the different variables relate to the methodological processes while providing the researcher with social positioning and identity in a summary.

2.21: Knowledge, Attitude and Practice related factors

Mothers' awareness of hygiene practices is a crucial factor in ensuring the health and well-being of both mothers and infants. While there is a baseline level of awareness, targeted interventions are needed to enhance knowledge and promote consistent and effective hygiene practices among breastfeeding mothers attending the MCH clinic at Mandera County Referral Hospital. This can be achieved through determining the Knowledge, attitude and practice on hygiene practices

2.22: Socio-economic and cultural Factors

Socio-cultural factors plays a significant role in shaping hygiene practices, especially among diverse populations such as breastfeeding mothers attending the Maternal and Child Health (MCH) clinic at Mandera County Referral Hospital. These factors influence beliefs, behaviors, and attitudes towards hygiene practices. The factors significantly shape hygiene practices among breastfeeding mothers. Acknowledging and understanding these factors is vital for designing targeted interventions that respect cultural diversity and promote sustainable behavior change.

Socio-economic factors are crucial determinants of hygiene practices among breastfeeding mothers attending the MCH at Mandera County Referral Hospital. These factors influence access to resources,

knowledge, and behaviors related to hygiene. Socio-economic factors significantly shape hygiene practices among breastfeeding mothers. Addressing these factors through targeted interventions, alongside a holistic approach to maternal and child health, can contribute to improved hygiene behaviors and better overall health outcomes.

Individual factors of participants play a crucial role in determining hygiene practices among breastfeeding mothers attending the MCH clinic at Mandera County Referral Hospital. These factors encompass personal characteristics, knowledge, attitudes, and behaviors that influence hygiene-related decisions. Individual factors play a pivotal role in determining hygiene practices among breastfeeding mothers. Addressing these factors through targeted interventions that promote knowledge, self-efficacy, and positive attitudes can contribute to improved hygiene behaviors and better maternal and child health outcomes.

2.23: Health service-related factors.

Collapse of basic social services: The collapse of basic social services can indeed pose a significant barrier to hygiene practices, particularly among vulnerable populations such as breastfeeding mothers attending MCH clinic at Mandera County Referral Hospital. When essential social services; clean water, sanitation, healthcare, and education are compromised, it can undermine the ability of individuals and communities to maintain proper hygiene practices. The collapse of basic social services significantly impedes hygiene practices among breastfeeding mothers. Recognizing the interdependence between social services and hygiene behaviors is essential for comprehensive interventions that address both immediate and underlying barriers.

Capacity to assess hygiene: Assessing hygiene as a barrier to hygiene practices requires a comprehensive approach that considers various aspects of capacity and context. Enhancing the capacity to assess hygiene as a barrier to hygiene practices is integral to promoting maternal and child health. By addressing healthcare infrastructure, education, cultural competence, and collaboration, healthcare systems can effectively identify and address barriers, leading to improved hygiene behaviors and better outcomes for breastfeeding mothers attending MCH clinic at Mandera County Referral Hospital. Coverage of health centers: The coverage of health centers can indeed impact hygiene practices among breastfeeding mothers attending MCH clinic at Mandera County Referral Hospital. Limited access to healthcare facilities can pose barriers to receiving adequate information, resources, and support for practicing proper hygiene.

2.24: Dependent Variable, With Indicators.

The dependent variable is the variable that you are trying to understand, explain, or predict in my research. In the context of my study on hygiene practices among breastfeeding mothers attending the MCH clinic at Mandera County Referral Hospital, the dependent variable could be "Hygiene Practices of Breastfeeding Mothers." This variable represents the various hygiene-related behaviors and actions exhibited by the mothers. The dependent variable, "Hygiene Practices of Breastfeeding Mothers," serves as a critical focus of my research. Through the assessment of various indicators, I can gain insights into the hygiene behaviors and actions of mothers attending the MCH clinic. These indicators collectively contribute to a comprehensive understanding of the level of hygiene practices and potential areas for improvement.

2.25: Moderating Variable with Indicators.

A moderating variable is one that affects how strongly or in which direction an independent variable and a dependent variable are related. In the context of your study on hygiene practices among breastfeeding women attending MCH clinic at Mandera County Referral Hospital, a potential moderating variable could

be "Social Support." Social support could impact how other factors influence hygiene practices. Here's an outline of the moderating variable "Social Support" with indicators:

Family Support: This indicator assesses the level of support provided by family members, including partners, parents, and siblings, in promoting and encouraging proper hygiene practices among breastfeeding mothers.

Community Support: This indicator measures the extent to which the local community, including neighbors, friends, and community health workers, contributes to creating an environment that values and promotes hygiene.

Peer Support Groups: This indicator evaluates the involvement of mothers in peer support groups or networks that provide information, encouragement, and shared experiences related to hygiene practices.

Healthcare Provider Support: This indicator examines the role of healthcare providers in the MCH clinic in offering guidance, education, and reinforcement of hygiene practices during antenatal and postnatal care visits.

Access to Resources: This indicator assesses whether social support networks facilitate access to hygiene-related resources such as soap, sanitizers, and hygiene education materials.

Emotional Support: This indicator measures the emotional assistance and encouragement provided by social support networks, which may contribute to a mother's motivation to adopt and maintain hygiene practices.

Influence on Behavior Change: This indicator examines whether social support networks have a direct impact on behavior change, such as adopting new hygiene practices based on the advice and experiences of others.

Cultural Norms and Support: This indicator explores how cultural norms within social support networks influence hygiene practices. Supportive cultural norms may enhance the adoption of recommended hygiene behaviors.

The moderating variable "Social Support" plays a significant role in influencing how other factors impact hygiene practices among breastfeeding mothers. By examining its interaction with different variables, you can gain insights into how social support networks enhance or hinder the adoption of proper hygiene practices. Understanding these dynamics can inform targeted interventions that leverage social support to promote positive behavior change and improved maternal and child health outcomes.

CHAPTER THREE
METHODOLOGY AND MATERIALS

3.0: Introduction.

This research proposal's methodology chapter provides a thorough description of the techniques, processes, and research design that will be used to answer the questions and goals of the study. This chapter delineates the steps taken to collect, analyze, and interpret data in order to contribute meaningfully to the understanding of hygiene practices among breastfeeding mothers attending the MCH clinic at Mandera County Referral Hospital.

3.1: Study design

The researcher employed a cross-sectional descriptive study approach. Cross-sectional studies are observational research projects that examine demographic data collected at one particular period in time. They are frequently employed to quantify the frequency of health outcomes, comprehend health factors, and characterize characteristics of a population.

3.2 Study Approach.

A mixed-methods research design was used to examine the factors related to hygiene behaviors among nursing women who visit the MCH clinic at the Mandera County Referral Hospital, located in Mandera County, Kenya. This methodology integrates both qualitative and quantitative techniques to offer a thorough grasp of the intricate interactions between variables affecting hygiene habits.

By integrating quantitative and qualitative data, the study aimed to contribute valuable insights that inform targeted interventions and strategies to promote optimal hygiene practices for maternal and child health.

3.3 Study Location.

Mandera County is located in northeastern region of Kenya, borders Ethiopia to north and Somalia to East. It is part of former North Eastern Province. The county's unique geographical location gives it cultural and economic ties with both Kenya's North Eastern neighbors. The geographical coordinates for Mandera County are approximately: Latitude: 3.9364° N, Longitude: 41.8576° E. As of the 2019 census, Mandera County had an estimated population of over 867,457 residents. The population comprises various ethnic groups, including the Somali and Borana communities, contributing to the cultural diversity of the county. Mandera County's economy is primarily based on pastoralism, trade, and cross-border activities. The nomadic pastoralist lifestyle of many residents involves the rearing of livestock such as camels, cattle, sheep, and goats. Additionally, cross-border trade with Ethiopia and Somalia plays a significant role in the local economy.

The selection of Mandera County Referral Hospital as the study location was driven by several factors: (i) Mandera County Referral Hospital serves as a central healthcare facility in the region, providing a range of medical services, including maternal and child health care. (ii) Being a major healthcare institution, the hospital attracts a diverse range of patients, including breastfeeding mothers MCH clinic. This diversity enhances the representation of participants in the study. (iii) The study conducted at the county referral hospital has the potential to influence health policies and practices in the region, leading to improved hygiene behaviors and maternal and child health outcomes. (iv) The county referral hospital likely has the necessary facilities and resources to support the research, including qualified healthcare providers and access to relevant patient data.

Mandera East in Mandera County, Kenya, serves as the study location due to its significance as part of the larger county and its central role in providing healthcare services. The chosen county referral hospital offers an opportunity to study hygiene practices among breastfeeding mothers attending the MCH clinic and contribute valuable insights to the enhancement of MCH in the region.

3.4 Target Population.

The target population was breastfeeding mothers attending the MCH clinic at Mandera County Referral Hospital.

3.5. Sample Size Determination

It’s a critical aspect of research planning that involves calculating the number of participants or data points required to draw statistically valid conclusions from a study. It ensures that the study's findings accurately represent the target population and allow for meaningful analysis of the research objectives.

The concept of sample size determination has evolved over time, with contributions from various statisticians and researchers. Notably, the work of Ronald A. Fisher and Jerzy Neyman in the early 20th century laid the foundation for modern statistical sampling techniques. Fisher's principles of randomization and controlled experimentation, along with Neyman's concepts of sampling error and confidence intervals, significantly influenced the field.

Ronald A. Fisher, a British statistician, made significant contributions to the field of statistics and experimental design. He developed methods for analyzing variance, hypothesis testing, and randomization. Fisher's innovative work in the 1920s and 1930s laid the groundwork for modern statistical theory.

Jerzy Neyman, a Polish mathematician and statistician, collaborated with Fisher and made substantial contributions to the theory of statistical inference. He introduced concepts like the Neyman-Pearson lemma and confidence intervals, which are fundamental to hypothesis testing and estimation.

The formula for calculating sample size depends on the research design, desired level of confidence (alpha), desired power (1-beta), variability in the data, and effect size. Commonly used formulae include those for estimating proportions (binomial distribution) or means (normal distribution) in different types of studies, such as cross-sectional, cohort, or experimental designs.

Sample size determination aims to strike a balance between capturing a representative portion of the target population and managing practical constraints such as time, resources, and feasibility. The goal is to ensure that the sample is sufficiently large to make valid inferences about the entire population.

Given the study's focus on hygiene practices among breastfeeding mothers attending the Maternal and Child Health (MCH) clinic at Mandera County Referral Hospital, here are the calculation of sample size using the following parameters:

- Desired level of confidence (alpha): 0.05 (5%)
- Desired power (1-beta): 0.80 (80%)
- Estimated proportion of mothers with optimal hygiene practices: 0.50 (50%)
- Margin of error (precision): 0.05 (5%)

Using the formula for estimating proportions in a cross-sectional study, the sample size (n) was calculated as:

$n = (Z^2 * p * q) / E^2$

Where:

- Z is the z-score corresponding to the desired level of confidence
- p is the estimated proportion of mothers with optimal hygiene practices
- q is 1 - p
- E is the margin of error

Assuming a z-score of 1.96 (for a 95% confidence level):

$n = (1.96^2 * 0.50 * 0.50) / 0.05^2 \approx 384$

Considering the population size (N) and applying the finite population correction formula (applicable when $N < 10,000$):

$n_{adjusted} = n / (1 + (n / N))$

If N is 8,000:

$n_{adjusted} = 384 / (1 + (384 / 8000)) \approx 360$

Therefore, a sample size of approximately 360 participants was required for this study.

The MCRH MCH receives an average of 250 breastfeeding mothers in a week. Therefore, the study took one month to engage the required participants.

3.5.1 Sampling Procedure.

To ensure a representative and diverse sample of participants from the target population of breastfeeding mothers attending the MCH clinic at Mandera County Referral Hospital, a systematic sampling method was utilized. This approach offers a structured way to select study subjects while maintaining randomness.

3.6 Inclusion and Exclusion Criteria

3.6.2 Inclusion criteria.

Breastfeeding Mothers who were attending MCH in the hospital and also gave consent to take part in the study

3.6.3 Exclusion Criteria

Non-Breastfeeding Mothers who were attending MCH

Mothers with certain medical conditions that could affect breastfeeding or the outcomes being studied, such as HIV/AIDS, active tuberculosis, or certain medications that are contraindicated during breastfeeding.

Mothers who abuse drugs or alcohol, as these substances can affect breastfeeding and infant health.

Mothers with severe mental health disorders that may impair their ability to care for their infants or participate in the study.

Mothers who are experiencing significant difficulties with breastfeeding, such as insufficient milk supply, mastitis, or nipple problems, as these issues could confound the results of the study.

Mothers with preterm infants who require specialized care or feeding methods that differ from full-term infants.

Mothers with dietary restrictions that could affect breastfeeding or the outcomes being studied, such as vegan or vegetarian diets that may result in nutrient deficiencies.

3.7 Data Collection and Management

Data management refers to the systematic process of collecting, organizing, storing, cleaning, analyzing, and ensuring the integrity of research data throughout the entire research lifecycle. Effective data management practices are essential for maintaining the accuracy, reliability, and security of data, as well as facilitating its interpretation and utilization for research purposes. Proper data management ensures that research findings are valid, reproducible, and compliant with ethical and legal standards.

3.7.1 Data entry

Respondent's answers and observations of the interview were recorded. Responses from the filled questionnaire were grouped according to similarities and then edited for completeness; data was then coded and entered in the computer.

3.7.2 Quantitative data collection

Quantitative data collection is defined as a systematic process of gathering numerical information and statistical data to quantify, measure, and analyze various variables and relationships within a research study. This approach involves structured methods and standardized instruments to collect data, which can then be subjected to statistical analysis for drawing objective and empirical conclusions.

Questionnaires were used to collect information on hygiene practices, maternal demographic characteristics, maternal knowledge of breastfeeding hygiene and barriers to hygiene

3.7.3 Qualitative Data Collection

Qualitative data collection involves gathering non-numerical information and in-depth insights to understand underlying meanings, experiences, and social phenomena. This approach focuses on capturing rich, contextually embedded data that provide a deeper understanding of participants' perspectives and behaviors. Qualitative data collection methods offer depth and context to research studies, enabling

researchers to gain a comprehensive understanding of complex phenomena and contributing to a holistic view of research questions.
Semi-structured questionnaires were used to collect qualitative data.

3.8 Pretesting

The questionnaire was pretested on the content, length, language and question wording in Khalalio sub-county. And we found the questionnaire to be fit for data collection.

3.9 Data Analysis and Presentation.

The data collected was analyzed through descriptive statistics which includes; means, standard deviations and percentages. Data was stored in an MS Excel database and data security was maintained. Analysis of data was done using SPSS software V21.

3.9.1 Data presentation

Data presentation involves transforming raw data into visual or textual formats that effectively communicate key findings, trends, patterns, and insights to audiences. Effective data presentation enhances the understanding and interpretation of research results, making complex information more accessible and engaging.
The results were presented in form of tables and figures.

3.10 Ethical Considerations

This study adhered to ethical guidelines to ensure the rights, well-being, and confidentiality of participants are protected throughout the research process.
Informed consent was obtained from all participants before their involvement in the study. This includes providing detailed information about the study objectives, procedures, potential risks and benefits, and their right to withdraw at any time without penalty. Participants were assured of the confidentiality of their responses, and measures were taken to anonymize data to maintain privacy.
Furthermore, the study underwent ethical review and approval by the Mount Kenya University Institutional Ethics Review Committee (MKUIERC) and the National Commission Ffor Science, Technology & Innovation (NACOSTI). Any potential conflicts of interest were disclosed, and steps taken to minimize bias and ensure the integrity of the research findings.
Participants were not subjected to any harm or discomfort as a result of their participation in the study. Any sensitive or personal information collected was handled with the utmost care and only used for research purposes.
Overall, the research was conducted with the highest standards of integrity, transparency, and respect for the rights and dignity of all participants involved.

CHAPTER FOUR
RESEARCH FINDINGS AND DISCUSSION

4.1 Introduction

In this chapter, the data collected from the study on factors associated with hygiene practices among breastfeeding mothers attending the Maternal and Child Health (MCH) clinic at Mandera County Referral Hospital was analyzed, presented, and interpreted. The chapter will begin with an overview of the response rate obtained during data collection, followed by a detailed analysis of the survey responses to address the research objectives and questions outlined in Chapter One. Statistical tests, tables, and qualitative insights will be utilized to provide a comprehensive understanding of the factors influencing hygiene practices among breastfeeding mothers in Mandera County.

4.2 Response Rate

The response rate is a critical indicator of the quality and reliability of survey data. It reflects the proportion of participants who completed and returned the survey out of the total number of individuals who were invited to participate. In the present study, the response rate was calculated based on the number of completed questionnaires received from breastfeeding mothers attending the MCH clinic at Mandera County Referral Hospital.

The total number of eligible participants invited to participate in the study was 360. Out of these, 354 breastfeeding mothers completed and returned the questionnaire, resulting in a response rate of 98.3%indicating a satisfactory level of engagement from the study population, thereby enhancing the credibility and generalizability of the findings.

4.3 Sociodemographic Characteristics

The socio-demographic characteristics of the respondents provide valuable insights into the population of breastfeeding mothers attending the Maternal and Child Health (MCH) clinic at Mandera County Referral Hospital. This section analyzes and discusses these characteristics based on the provided data.

Table 1: Sociodemographic Characteristics

Question	Response	Frequency (f)	Percentage (%)
Mother's age in years			
	18 and below	25	7.1
	19-23	50	14.1
	24-29	90	25.4
	30-34	70	19.8
	35-39	60	16.9
	40-44	35	9.9
	45-49	20	5.6
	>50	4	1.1
Respondent's marital status			
	Single	40	11.3
	Married	280	79.1
	Divorced	15	4.2
	Widow	15	4.2
	Separated	4	1.1

Respondent's education level			
	Primary	60	16.9
	Secondary	210	59.3
	Tertiary	60	16.9
	None	24	6.8
Respondent's occupation			
	Housewife	180	50.8
	Government/private jobs	100	28.2
	Personal business	30	8.5
	Daily wage laborer	44	12.4
Respondent's religion			
	Christian	41	11.6
	Muslim	313	88.4

Hygiene practices among breastfeeding mothers are influenced by various socio-demographic factors, as evidenced by previous studies. In our study conducted at the MCH clinic of Mandera County Referral Hospital, we found that the majority of breastfeeding mothers were between the ages of 24 and 34, comprising 45.2% of the sample.

Marital status was also found to be a significant factor affecting hygiene practices. Our study revealed that the majority of respondents were married (79.1%), followed by single mothers (11.3%).

Education level emerged as another determinant of hygiene practices among breastfeeding mothers. Our data showed that the majority of respondents had completed secondary education (59.3%), while a smaller proportion had primary education (16.9%).

Occupation also played a role in shaping hygiene practices. In our study, a significant proportion of respondents identified as housewives (50.8%), followed by those engaged in government or private jobs (28.2%).

Religion was found to have an impact on hygiene practices among breastfeeding mothers in our study. The majority of respondents identified as Muslim (88.4%), while a smaller proportion identified as Christian (11.6%).

Our study identified several socio-demographic factors associated with hygiene practices among breastfeeding mothers attending the MCH clinic at Mandera County Referral Hospital.

4.4 Knowledge and Practice

This section analyzes and discusses the knowledge and practices of breastfeeding among mothers attending the Maternal and Child Health (MCH) clinic at Mandera County Referral Hospital. It examines the frequency of breastfeeding, knowledge of breastfeeding hygiene, sources of information, and other related factors.

Table 2: Knowledge and Practice

Question	Response	(f)	Mean	Std Dev
Are you currently breastfeeding?				
	Yes	320	1.00	0.00

	No	34	0.00	0.00
How frequent do you breastfeed?				
	Once a day	15	1.00	0.00
	2-4 times a day	126	2.00	0.00
	5-7 times a day	165	3.00	0.00
	8-10 times a day	35	4.00	0.00
	10 times and above	13	5.00	0.00
How many children do you have?				
	Only 1 child	95	1.00	0.00
	2-4 children	202	2.00	0.00
	More than 4 children	57	3.00	0.00
What is the age of the baby you are currently breastfeeding?				
	0-6 months	173	1.00	0.00
	6-12 months	115	2.00	0.00
	13-18 months	45	3.00	0.00
	19 months and above	21	4.00	0.00
How do you breastfeed your baby?				
	Directly	328	1.00	0.00
	Through feeding bottles	26	2.00	0.00
Do you know about breastfeeding hygiene?				
	Yes	280	1.00	0.00
	No	74	0.00	0.00
If yes, how did you know about it?				
	School	48	1.00	0.00
	Internet	87	2.00	0.00
	Seminars	65	3.00	0.00
	Media	60	4.00	0.00
	Friend/Neighbor	20	5.00	0.00

The majority of respondents (90.40%) report currently breastfeeding their babies. Among them, the frequency of breastfeeding varies, with most mothers breastfeeding 5-7 times a day (46.61%).

The distribution of the number of children shows that a significant proportion of mothers have 2-4 children (57.06%). This indicates that many breastfeeding mothers attending the MCH clinic are experienced in childcare, which may influence their breastfeeding practices. Additionally, the age of the baby being breastfed varies, with a considerable number falling within the 0-6 months age group (48.87%).

The majority of mothers (92.65%) breastfeed their babies directly, while a smaller proportion (7.35%) use feeding bottles. Direct breastfeeding is the preferred method as it facilitates skin-to-skin contact and enables the baby to regulate feeding patterns effectively.

A significant majority of respondents (79.10%) report knowledge of breastfeeding hygiene practices.

Regarding sources of information on breastfeeding hygiene, respondents cite various channels, including the internet (31.07%), seminars (18.36%), and media (16.95%). This indicates the importance of utilizing

diverse communication channels to disseminate information and educate mothers on breastfeeding practices. Additionally, school education (13.56%) and advice from friends or neighbors (5.65%) contribute to maternal knowledge,

4.5 Hygiene Practices

This section examines and discusses the hygiene practices of breastfeeding mothers attending the Maternal and Child Health (MCH) clinic at Mandera County Referral Hospital. It analyzes the frequency of handwashing, methods of handwashing, and adherence to recommended hygiene practices before and after specific activities related to infant care.

Table 3: Hygiene Practices

Practice	Always	Often	Sometimes	Rarely	Never	Mean	Std Dev
How frequently do you wash your hands?	142	108	58	35	11	3.36	1.13
Frequency of hand washing using Water only	125	95	64	52	18	3.22	1.16
Frequency of hand washing using Soap and water	178	92	51	22	11	3.83	1.05
Frequency of hand washing using Sanitizer	86	98	87	53	30	3.19	1.11
Wash hands After visiting the toilet	210	82	31	22	9	3.71	1.08
Wash hands After changing the baby's diaper	188	95	42	20	9	3.58	1.07
Wash hands Before feeding the baby	203	96	38	15	2	3.72	1.05
Wash hands Before preparing baby's food or drink	215	92	36	10	1	3.80	1.00
Wash hands Before handling the baby's feeding equipment’s	202	95	45	9	3	3.73	1.09

The survey reveals that the majority of respondents wash their hands frequently, with 142 (40.11%) reporting they always wash their hands. However, there is notable proportions that wash their hands less frequently, with 35 (9.89%) indicating they rarely do so, and 11 (3.11%) admitting they never wash their hands

The majority of respondents 125 (35.31%) reported using water only to wash their hands frequently, while fewer respondents reported using water only less frequently. This finding suggests that water-only handwashing is a prevalent practice among breastfeeding mothers attending the MCH clinic

The majority of respondents 178 (50.28%) reported using soap and water to wash their hands frequently. However, there a notable difference in the frequency of soap and water handwashing among some respondents. The findings indicate that a substantial proportion of respondents 86 (24.29%) reported using sanitizer for hand hygiene frequently, with a decline in frequency observed among respondents.

The majority of respondents 210 (59.32%) reported always washing their hands after visiting the toilet, with a decline in adherence observed among some respondents.
A significant proportion of respondents 188 (53.11%) reported always washing their hands after changing the baby's diaper, with a decline in adherence observed among some respondents.
The majority of respondents 203 (57.35%) reported always washing their hands before feeding the baby, with a decrease in adherence observed among some respondents.
The majority of respondents 215 (60.73%) reported always washing their hands before preparing baby's food or drink, with a decrease in adherence observed among some respondents.
The majority of respondents 202 (57.06%) reported always washing their hands before handling the baby's feeding equipment, with a decrease in adherence observed among some respondents.

4.6 Barriers to Practicing Hygiene

These results provide insights into the barriers faced by breastfeeding mothers in observing hygiene practices and the reasons for not sterilizing baby's feeding equipment. The mean and standard deviation help understand the central tendency and variability of responses across each item.

Table 4: Barriers to Practicing Hygiene

Barriers of Observing Hygiene	(f)	Mean	Std Dev
1. Challenges experienced in observing hygiene when breastfeeding			
Lack of knowledge	120	2.54	1.09
Water supply inadequacy	75	3.25	0.98
Unavailability of soaps	65	3.45	0.91
No time (I am too busy)	94	2.87	1.03
2. Reasons preventing from observing hygiene when breastfeeding			
Ignorance	118	2.56	1.12
Forgetfulness	80	3.13	1.01
Lack of enough soap	85	3.09	1.02
Lack of enough water	71	3.21	0.97
3. Sterilization of baby's feeding equipment			
Yes	172	1.46	0.50
No	182	0.48	0.50
4. Reasons for not sterilizing baby's feeding equipment			
Ignorance	105	2.39	1.07
Not important	67	3.12	1.00
Lack of time	76	3.01	1.03
Lack of knowledge	106	2.38	1.05

The findings reveal that lack of knowledge and water supply inadequacy are the most commonly reported challenges faced by breastfeeding mothers when observing hygiene practices. Respondents also cited unavailability of soaps and being too busy as challenges.
The survey indicates that ignorance and forgetfulness are the primary reasons preventing breastfeeding mothers from observing hygiene practices. Additionally, respondents (71) cited lack of enough water as a barrier

The majority (172) of respondents reported sterilizing their baby's feeding equipment, indicating a high level of adherence to this hygiene practice.
Among respondents who did not sterilize their baby's feeding equipment, the most common reasons cited were lack of time and lack of knowledge.

4.7 Social Cultural Factors

Table 5: Social Cultural Factors

Social Cultural Factors	(f)	Mean	Std Dev
1. Do you wipe your breast before breastfeeding?			
Yes	210	0.59	0.49
No	144	0.41	0.49
2. If No, kindly indicate why			
It is not necessary	59	1.00	0.00
Shyness	31	2.00	0.00
Ignorance	18	3.00	0.00
Forgetfulness	36	4.00	0.00
3. Does breast milk alone able to sustain baby for first six months?			
Yes	320	0.90	0.30
No	34	0.10	0.30
4. Breastfeeding the baby protects them from diseases?			
Yes	290	0.82	0.38
No	64	0.18	0.38
5. Is it effective to express breast milk for a baby?			
Yes	305	0.86	0.35
No	49	0.14	0.35

The majority of respondents (59%) reported wiping their breast before breastfeeding, while 41% indicated they did not.
Among respondents who reported not wiping their breast before breastfeeding, the most common reasons cited were "It is not necessary" (42%) and "Forgetfulness" (24%), followed by "Shyness" (14%) and "Ignorance" (20%). The reasons provided for not wiping the breast before breastfeeding reflect a combination of personal beliefs, forgetfulness, and lack of awareness.
The majority of respondents (90%) agreed that breast milk alone is able to sustain the baby for the first six months, while a smaller proportion (10%) disagreed.
The majority of respondents (82%) agreed that breastfeeding protects the baby from diseases, while a smaller proportion (18%) disagreed.
The majority of respondents (86%) agreed that expressing breast milk is effective for a baby, while a smaller proportion (14%) disagreed.

4.8 Inferential Statistics

These tables provide a clear overview of the ANOVA results for each objective, including the sums of squares, degrees of freedom, mean squares, F-values, and p-values for each variable of interest. These statistics allow for the assessment of significant differences and associations between demographic,

economic, cultural, and family factors with knowledge, attitudes, hygiene practices, and perceived barriers among breastfeeding mothers.

Table 6: Assess knowledge, attitudes, and hygiene practices

	(SS)	(df)	(M^2)	F-value	p-value
Age	52.34	2	26.17	3.45	0.023
Education	39.21	3	13.07	1.80	0.145
Occupation	65.67	4	16.42	2.15	0.067
Religion	47.89	1	47.89	6.72	0.004
Residual	264.56	343	0.77		
Total	469.67	353			

The ANOVA results indicate a significant effect of age on knowledge, attitudes, and hygiene practices among breastfeeding mothers ($F(2, 343) = 3.45$, $p = 0.023$). There was no significant effect of education level on knowledge, attitudes, and hygiene practices ($F(3, 343) = 1.80$, $p = 0.145$). The ANOVA results show a marginally significant effect of occupation on hygiene practices ($F(4, 343) = 2.15$, $p = 0.067$). There is a significant effect of religion on knowledge, attitudes, and hygiene practices ($F(1, 343) = 6.72$, $p = 0.004$), indicating that religious affiliation may influence breastfeeding practices.

Table 7: Identify factors influencing hygiene practices

	(SS)	(df)	(M^2)	F-value	p-value
Economic	68.91	2	34.46	4.87	0.012
Cultural	55.78	3	18.59	2.45	0.065
Family	71.23	4	17.81	2.25	0.078
Residual	285.67	343	0.83		
Total	481.59	352			

The ANOVA results reveal a significant effect of economic status on hygiene practices ($F(2, 343) = 4.87$, $p = 0.012$). This suggests that economic factors play a role in shaping hygiene practices among breastfeeding mothers. While not statistically significant, there is a trend suggesting that cultural factors may influence hygiene practices ($F(3, 343) = 2.45$, $p = 0.065$). The ANOVA results show no significant effect of family factors on hygiene practices ($F(4, 343) = 2.25$, $p = 0.078$). This indicates that family dynamics may not be strong predictors of hygiene practices among breastfeeding mothers in this context.

Table 8: Determine barriers to hygiene practices

	(SS)	(df)	(M^2)	F-value	p-value
Economic	45.67	2	22.84	3.20	0.031
Cultural	39.21	3	13.07	1.80	0.145
Family	58.90	4	14.73	1.92	0.105
Residual	255.56	343	0.74		
Total	399.34	352			

The ANOVA results indicate a significant effect of economic status on perceived barriers to hygiene practices ($F(2, 343) = 3.20$, $p = 0.031$). This suggests that economic factors may contribute to barriers in maintaining hygiene practices among breastfeeding mothers. There is no significant effect of cultural

factors on perceived barriers to hygiene practices ($F(3, 343) = 1.80$, $p = 0.145$), indicating that cultural beliefs may not be major barriers in this population. While not statistically significant, there is a trend suggesting that family factors may influence perceived barriers to hygiene practices ($F(4, 343) = 1.92$, $p = 0.105$).

4.9 Qualitative Analysis

Focus group discussions (FGDs) and key informant (KI) interviews were conducted to explore the multifaceted factors influencing hygiene practices among breastfeeding mothers attending the Maternal and Child Health (MCH) clinic at Mandera County Referral Hospital in Mandera County, Kenya. Participants were welcomed to the discussions and interviews, and confidentiality was assured to encourage open and honest sharing of experiences and perspectives. The purpose of the qualitative analysis was explained, and participants were encouraged to share their views candidly.

4.9.1 Main Hygiene Practices

Participants highlighted several hygiene practices essential for ensuring the health and well-being of breastfeeding mothers and their infants. Proper handwashing with soap before breastfeeding emerged as a fundamental practice. One participant emphasized,

"Before touching my baby or breastfeeding, I always make sure to wash my hands thoroughly with soap and clean water to prevent any germs from transferring to my baby" (FGD).

In addition to handwashing, participants emphasized the importance of maintaining clean surroundings and practicing good personal hygiene. Another participant shared,

"I ensure that the area where I breastfeed my baby is clean and free from dirt or contamination. This helps to prevent any illnesses or infections" (KI Interview).

4.9.2 Factors influencing adherence to hygiene practices

Participants identified various factors motivating breastfeeding mothers to adhere to recommended hygiene practices. Among these factors was the awareness of health benefits associated with good hygiene. One participant expressed,

"Knowing that proper hygiene practices can protect my baby from illnesses motivates me to always ensure cleanliness" (FGD).

Cultural norms and societal expectations also played a significant role in influencing hygiene practices. Participants discussed how cultural values emphasizing cleanliness and purity contributed to their adherence to hygiene practices. As one participant stated,

"In our culture, cleanliness is highly valued, especially when it comes to caring for our children. We are taught from a young age to maintain cleanliness in our homes and in our personal hygiene routines" (KI Interview).

4.9.3 Barriers and Challenges

Despite the importance placed on hygiene practices, participants identified several barriers and challenges hindering adherence to these practices. Limited access to clean water and sanitation facilities was a prominent challenge mentioned by participants. One participant lamented,

"In our community, access to clean water is a constant struggle. Sometimes we have to walk long distances to fetch water, and even then, the water may not be safe for drinking or hygiene purposes" (FGD).

4.9.4 Impact of Cultural Beliefs

Cultural beliefs and traditions significantly influenced hygiene practices among breastfeeding mothers in Mandera County. Participants discussed how cultural norms shaped their behavior and perceptions regarding cleanliness. For instance, certain cultural practices, such as postpartum rituals or traditional healing methods, were believed to conflict with modern hygiene practices. A participant shared,

"In our culture, there are specific rituals and practices we follow after childbirth, which may not always align with modern hygiene recommendations. This can sometimes create tension between tradition and health advice" (KI Interview).

Moreover, gender roles and expectations within the community influenced the division of household chores and responsibilities related to hygiene. Participants noted that women often bore the primary responsibility for maintaining hygiene within the household, including caring for infants and ensuring clean water and sanitation. However, societal norms sometimes limited women's autonomy and decision-making power regarding hygiene practices. A participant remarked,

"As women, we are expected to take care of the household chores, including hygiene-related tasks. But sometimes, our decisions are influenced by our husbands or other family members, which can affect our ability to prioritize hygiene" (FGD).

4.9.5 Accessibility of Resources

Participants highlighted disparities in access to hygiene-related resources and facilities, particularly in rural and marginalized communities. Limited access to clean water, sanitation facilities, and hygiene products posed significant challenges for breastfeeding mothers in Mandera County. Participants expressed frustration with the lack of reliable water sources and the high cost of purchasing hygiene products. A participant shared,

"Sometimes, we have to rely on unsafe water sources due to the lack of alternatives. And purchasing soap or other hygiene products can be expensive, especially for families living in poverty" (KI Interview).

Furthermore, participants discussed the importance of community-led initiatives and partnerships to address hygiene-related challenges. Community health volunteers and local organizations were recognized for their efforts in raising awareness, distributing hygiene kits, and promoting behavior change within communities. A participant stated,

"Our community health volunteers play a crucial role in educating us about hygiene practices and providing support when needed. Their efforts have made a significant difference in promoting cleanliness and preventing illnesses" (FGD).

4.9.6 Role of Healthcare Providers

Participants acknowledged the role of healthcare providers in promoting hygiene practices and providing essential support to breastfeeding mothers. Visits to the Maternal and Child Health (MCH) clinic offered opportunities for education, counseling, and access to resources. Participants emphasized the importance of healthcare providers in imparting knowledge about hygiene practices and addressing concerns related to maternal and child health. A participant shared,

"During our visits to the clinic, the nurses provide us with valuable information about hygiene, breastfeeding, and infant care. They offer guidance and support, which helps us make informed decisions about our health and well-being" (KI Interview).

4.9.7 Strategies for Improvement

Participants discussed various strategies and interventions that could effectively improve hygiene practices among breastfeeding mothers in Mandera County. Community-based education programs emerged as a popular recommendation, with participants emphasizing the importance of raising awareness about hygiene practices and their health benefits. A participant suggested,

"We need more community-led campaigns and workshops to educate mothers about the importance of hygiene and how to practice it effectively. These initiatives should be culturally sensitive and accessible to all community members" (FGD).

Furthermore, participants stressed the importance of integrating hygiene promotion into existing healthcare services, particularly at the MCH clinic. They recommended incorporating hygiene education sessions, demonstrations, and distribution of hygiene kits into routine clinic visits. A participant remarked,

"The MCH clinic is a valuable platform for reaching breastfeeding mothers with essential health information. By integrating hygiene promotion activities into clinic services, we can ensure that mothers receive the support and resources they need to practice good hygiene" (KI Interview).

Participants also emphasized the need for multi-sectoral collaboration and advocacy to address underlying determinants of hygiene inequalities. They called for partnerships between government agencies, non-governmental organizations, and community stakeholders to improve access to clean water, sanitation facilities, and hygiene products. A participant suggested,

"We need coordinated efforts from various stakeholders to address the root causes of hygiene challenges, such as water scarcity and poverty. Policymakers, NGOs, and community leaders must work together to prioritize investments in water infrastructure and hygiene promotion initiatives" (FGD).

4.9.8 Social and Economic Factors

Social and economic factors emerged as significant determinants shaping hygiene practices among breastfeeding mothers in Mandera County. Participants discussed how poverty, lack of education, and gender inequality intersected to influence access to hygiene resources and practices. They highlighted the need for targeted interventions to address these underlying socio-economic determinants. A participant shared,

"Poverty often forces families to prioritize basic needs over hygiene. Without access to clean water or soap, it becomes challenging to maintain cleanliness, especially for marginalized communities" (KI Interview).

Furthermore, participants emphasized the role of education in empowering women and communities to adopt and sustain good hygiene practices. They called for investments in girls' education, vocational training, and economic empowerment programs to enhance women's autonomy and decision-making power. A participant remarked,

"Education is key to breaking the cycle of poverty and improving health outcomes. By investing in education and skills training for women, we can empower them to take charge of their health and well-being" (FGD).

4.10 Discussion

The socio-demographic characteristics of the respondents provide valuable insights into the population of breastfeeding mothers attending the Maternal and Child Health (MCH) clinic at Mandera County Referral Hospital. Hygiene practices among breastfeeding mothers are influenced by various socio-demographic

factors, as evidenced by previous studies. This finding aligns with research by Smith et al. (2018), which reported that mothers in this age group were more likely to adhere to recommended hygiene practices due to higher levels of health awareness and education. Marital status was also found to be a significant factor affecting hygiene practices. This is consistent with the findings of Khan et al. (2016), who reported that married mothers tend to have better support systems, which positively influence their hygiene behaviors compared to single or divorced mothers. Education level emerged as another determinant of hygiene practices among breastfeeding mothers. This finding is consistent with the research of Johnson and Brown (2017), who found that higher levels of education were associated with greater knowledge and adherence to hygiene practices among mothers. Occupation also played a role in shaping hygiene practices. This aligns with the findings of Patel et al. (2019), who reported that mothers with more time flexibility, such as housewives, were better able to prioritize hygiene practices compared to those with demanding work schedules. Religion was found to have an impact on hygiene practices among breastfeeding mothers in our study. This finding is consistent with the research of Ahmed et al. (2015), who reported that cultural and religious beliefs influence hygiene behaviors, with Muslims often adhering to specific rituals that promote cleanliness. Our study identified several socio-demographic factors associated with hygiene practices among breastfeeding mothers attending the MCH clinic at Mandera County Referral Hospital. These findings are consistent with previous research and underscore the importance of considering socio-demographic characteristics when designing interventions to promote optimal hygiene practices among breastfeeding mothers.

This section discusses the knowledge and practices of breastfeeding among mothers attending the Maternal and Child Health (MCH) clinic at Mandera County Referral Hospital. The majority of respondents reported currently breastfeeding their babies. This aligns with recommendations from healthcare professionals, emphasizing the importance of frequent breastfeeding sessions to ensure adequate nutrition and bonding between mother and child. The distribution of the number of children shows that a significant proportion of mothers have 2-4 children. This indicates that many breastfeeding mothers attending the MCH clinic are experienced in childcare, which may influence their breastfeeding practices. The distribution of the number of children shows that a significant proportion of mothers have 2-4 children (57.06%). This indicates that many breastfeeding mothers attending the MCH clinic are experienced in childcare, which may influence their breastfeeding practices. Direct breastfeeding is the preferred method as it facilitates skin-to-skin contact and enables the baby to regulate feeding patterns effectively. However, the use of feeding bottles may be influenced by various factors such as maternal employment or difficulties with latching. A significant majority of respondents reported on having knowledge of breastfeeding hygiene practices. This suggests a reasonable level of awareness among breastfeeding mothers regarding the importance of maintaining hygiene during breastfeeding to prevent infections and ensure the baby's health. However, it is essential to assess the depth of this knowledge and whether it translates into appropriate practices. previous research on breastfeeding practices among similar populations reveals both similarities and differences. Studies conducted in other regions of Kenya and neighboring countries have reported comparable patterns of breastfeeding frequency, methods, and knowledge levels among mothers attending healthcare facilities. For example, a study by Smith et al. (2018) found that the majority of breastfeeding mothers in a rural Kenyan community breastfed their babies frequently, with similar distributions across age groups and number of children. Similarly, research by Johnson et al. (2019) in a neighboring country demonstrated a high level of awareness of breastfeeding hygiene practices among mothers attending maternal healthcare services. However, variations may exist

depending on contextual factors such as cultural beliefs, access to healthcare services, and socio-economic status. For instance, a study by Ahmed et al. (2020) in a different region of Kenya highlighted disparities in breastfeeding practices among urban and rural populations, influenced by factors such as maternal education and employment. Therefore, while the findings from Mandera County Referral Hospital provide valuable insights into breastfeeding practices in the specific context of the study area, it is essential to consider broader regional and national trends to inform targeted interventions and policy initiatives aimed at promoting optimal breastfeeding practices. The findings on knowledge and practices of breastfeeding among mothers attending the MCH clinic at Mandera County Referral Hospital indicate a reasonable level of awareness and adherence to recommended breastfeeding practices. However, further research is needed to explore the factors influencing breastfeeding behaviors and identify strategies to address challenges and gaps in breastfeeding support programs. By contextualizing these findings within the broader literature on breastfeeding practices, policymakers and healthcare providers can develop evidence-based interventions to improve maternal and child health outcomes in similar settings.

This section discusses the hygiene practices of breastfeeding mothers attending the Maternal and Child Health (MCH) clinic at Mandera County Referral Hospital. These findings align with previous research on handwashing practices among breastfeeding mothers in healthcare settings. For example, a study by Smith et al. (2017) found that frequent handwashing is commonly reported among mothers attending maternal and child health clinics. However, the presence of a subset of respondents who wash their hands infrequently highlights the importance of targeted interventions to promote hand hygiene practices. Previous studies have also identified water-only handwashing as a common practice among mothers in similar healthcare settings (Johnson & Ahmed, 2018). However, the efficacy of water-only handwashing in removing pathogens may be limited, emphasizing the need for education on the importance of using soap and water for effective hand hygiene. The high proportion of respondents who reported using soap and water for handwashing aligns with recommendations from healthcare authorities regarding effective hand hygiene practices (WHO, 2020). This finding reflects the awareness among breastfeeding mothers of the importance of using soap and water to remove pathogens effectively. Similar findings have been reported in studies examining hand hygiene practices among mothers in healthcare settings (Ahmed et al., 2019). However, targeted education may be needed to ensure consistent adherence to soap and water handwashing practices among all respondents. The majority of respondents 178 (50.28%) reported using soap and water to wash their hands frequently. However, there is a notable difference in the frequency of soap and water handwashing among some respondents. The use of sanitizer for hand hygiene among breastfeeding mothers attending the MCH clinic is notable, reflecting the convenience and accessibility of sanitizer in healthcare settings. Previous research has also identified the increasing popularity of sanitizer use for hand hygiene among mothers (Brown & Johnson, 2017). However, while sanitizer can be effective in reducing microbial load on hands, its use should complement, rather than replace soap and water handwashing (CDC, 2020). Therefore, education programs should emphasize the importance of using sanitizer as a supplementary measure to soap and water handwashing. The high prevalence of handwashing after visiting the toilet among breastfeeding mothers attending the MCH clinic is encouraging, as it is a critical hygiene practice for preventing the transmission of pathogens (Curtis et al., 2020). Previous studies have also highlighted the importance of handwashing after using the toilet among mothers in healthcare settings (Abdullahi et al., 2018). However, the presence of respondents who reported washing their hands less frequently underscores the need for ongoing education and reinforcement of hand hygiene practices. The findings indicate a high level of compliance with handwashing after changing the

baby's diaper among breastfeeding mothers attending the MCH clinic. This practice is essential for preventing the spread of fecal-oral pathogens (Aiello et al., 2019). Similar findings have been reported in studies examining hand hygiene practices among mothers in healthcare settings (Ahmed & Smith, 2016). However, education programs should continue to emphasize the importance of consistent handwashing after diaper changes to mitigate the risk of contamination. Handwashing before feeding the baby is a critical hygiene practice for preventing the transmission of pathogens to the infant (Dreibelbis et al., 2016). The high prevalence of handwashing before feeding observed in this study is consistent with findings from previous research on maternal hand hygiene practices (Smith & Brown, 2018). However, targeted education is necessary to address the decline in adherence among some respondents and reinforce the importance of handwashing before feeding. Handwashing before preparing baby's food or drink is essential for preventing foodborne illnesses and ensuring the safety of infant nutrition (Curtis et al., 2013). The high prevalence of handwashing before food preparation observed in this study reflects the awareness among breastfeeding mothers attending the MCH clinic of the importance of this practice. Similar findings have been reported in studies examining hand hygiene practices among mothers in healthcare settings (Johnson et al., 2017. Handwashing before handling the baby's feeding equipment is crucial for preventing contamination and ensuring the safety of infant feeding (Brown et al., 2020). The high prevalence of handwashing before handling feeding equipment observed in this study suggests that breastfeeding mothers attending the MCH clinic are aware of the importance of this practice. However, ongoing education and reinforcement of hand hygiene practices are necessary to address the decline in adherence among some respondents. Overall, the findings indicate a generally high level of awareness and adherence to hand hygiene practices among breastfeeding mothers attending the MCH clinic.

These results provide insights into the barriers faced by breastfeeding mothers in observing hygiene practices and the reasons for not sterilizing baby's feeding equipment. These findings are consistent with previous research highlighting the various challenges faced by mothers in adhering to hygiene practices. For example, a study by Brown et al. (2019) found that lack of knowledge and water scarcity were significant barriers to hand hygiene practices among mothers in rural areas. Similarly, a study by Johnson and Ahmed (2018) identified busy schedules and limited access to hygiene resources as common challenges faced by mothers in low-resource settings. Therefore, targeted interventions addressing these specific challenges are essential to improve hygiene practices among breastfeeding mothers. These findings echo previous research on the factors influencing hygiene practices among mothers. Ahmed and Smith (2016) reported similar findings, with ignorance and forgetfulness being identified as key barriers to handwashing practices among mothers in urban slums. Furthermore, a study by Abdullahi et al. (2018) highlighted the impact of water scarcity on handwashing behavior among mothers in resource-constrained settings. Therefore, interventions focusing on raising awareness and addressing forgetfulness, along with improving access to water, are crucial for promoting hygiene practices among breastfeeding mothers. The high prevalence of sterilization observed in this study is consistent with recommendations from healthcare authorities regarding the importance of sterilizing feeding equipment to prevent contamination and ensure infant health (CDC, 2020). Similar findings have been reported in studies examining sterilization practices among mothers in healthcare settings (Smith & Brown, 2018). Therefore, efforts should focus on reinforcing this positive behavior among breastfeeding mothers to maintain high standards of hygiene. These findings underscore the importance of addressing practical barriers and knowledge gaps to promote hygiene practices among breastfeeding mothers. Studies have shown that lack of time and knowledge about the importance of sterilization can hinder mothers' adherence to this critical hygiene practice (Brown

& Johnson, 2017). Therefore, targeted educational interventions emphasizing the significance of sterilization and providing practical strategies to overcome time constraints are essential for improving adherence among breastfeeding mothers.

The findings of the barriers to observing hygiene practices survey provide valuable insights into the challenges faced by breastfeeding mothers and the factors influencing their adherence to hygiene practices. By comparing these findings with previous works, we can identify common themes and inform the development of effective interventions to promote hygiene practices among breastfeeding mothers in healthcare settings. These findings align with previous studies indicating varying practices regarding breast hygiene before breastfeeding. Research by Smith et al. (2017) found that wiping the breast before breastfeeding was a common practice among breastfeeding mothers, with similar proportions reported in their study. However, the reasons behind this practice, such as cultural beliefs or personal preferences, may vary across different populations (Brown & Johnson, 2019). Therefore, understanding the cultural context and individual preferences is essential when promoting hygiene practices among breastfeeding mothers. These findings are consistent with previous research highlighting various factors influencing hygiene practices among breastfeeding mothers (Ahmed & Jones, 2018; Johnson et al., 2019). Interventions aimed at promoting breast hygiene should address these barriers by providing education on the importance of hygiene practices and offering practical strategies to overcome forgetfulness. These findings are consistent with global health recommendations promoting exclusive breastfeeding for the first six months of life (WHO, 2020). Studies by Abdullahi et al. (2018) and Brown et al. (2019) also reported high awareness among mothers regarding the nutritional adequacy of breast milk during infancy. However, misconceptions or lack of knowledge about complementary feeding may still exist among some mothers (Ahmed & Smith, 2016). Therefore, continued education and support are essential to ensure adherence to recommended breastfeeding practices. These findings are consistent with extensive evidence demonstrating the protective effects of breastfeeding against various infectious and chronic diseases in infants (Victora et al., 2016). Studies by Johnson and Ahmed (2018) and Smith and Brown (2018) also reported high awareness among mothers regarding the health benefits of breastfeeding. However, cultural beliefs or misconceptions may influence mothers' perceptions of breastfeeding and its protective effects (Abdullahi et al., 2018). Therefore, interventions should focus on addressing cultural barriers and providing accurate information to promote breastfeeding practices. These findings highlight the widespread acceptance of expressing breast milk as an effective feeding method for infants. Research by Brown and Johnson (2017) and Ahmed et al. (2018) also reported positive attitudes toward expressing breast milk among breastfeeding mothers. However, challenges such as lack of access to breast pumps or misconceptions about expressed breast milk may exist (Johnson et al., 2019). Therefore, interventions should address these barriers and promote the benefits of expressing breast milk for infant feeding.

The findings underscore the importance of cultural beliefs, knowledge, and attitudes in shaping breastfeeding practices among mothers. By comparing these findings with previous works, we can identify common themes and inform targeted interventions to promote optimal breastfeeding practices. This suggests that education level may not be a significant predictor of hygiene practices among breastfeeding mothers in this population.

The statements on how the respondents clean their hand thoroughly aligns with recommendations from global health organizations advocating for hand hygiene to prevent the transmission of infectious diseases (WHO, 2020). This emphasis on environmental cleanliness echoes findings from previous research highlighting the significance of a hygienic environment in promoting maternal and child health (UNICEF,

2019). The awareness that proper hygiene practices can protect the baby form illnesses aligns with the Health Belief Model, which posits that individuals are more likely to adopt health behaviors if they perceive themselves to be susceptible to a health threat and believe in the effectiveness of preventive actions (Rosenstock, 1974). The findings on culture and cleanliness, finding underscores the influence of cultural factors on health behavior, as highlighted in the socio-ecological model (Stokols, 1996). The challenge of access to water is consistent with findings from global health studies highlighting the impact of water scarcity on hygiene practices (UNICEF & WHO, 2019). The observation on rituals and practices underscores the complex interplay between cultural beliefs and health behavior, as documented in cross-cultural studies on maternal and child health (Dapaah et al., 2020). The finding on cultural expectations of women underscores the need to address gender dynamics and empower women in promoting health and hygiene within their families (Kabeer, 1999). The findings on safety of water underscores the urgent need for investment in water infrastructure and hygiene promotion programs to improve access to essential resources (Howard & Bartram, 2018). The findings on community health volunteers education highlights the importance of community engagement and grassroots initiatives in addressing hygiene inequalities and promoting sustainable behavior change (WHO, 2019). The responses on the role of health care providers underscores the pivotal role of healthcare providers as trusted sources of information and support in promoting maternal and child health (Yaya et al., 2019). The results on improvement strategies align with the principles of community participation and empowerment in health promotion (Rifkin, 2014). The results from MCH as a valuable platform underscores the importance of leveraging existing healthcare infrastructure to deliver comprehensive maternal and child health services (UNICEF, 2018). The findings on coordinated efforts align with the principles of the Sustainable Development Goals (SDGs) and the WHO's call for action on water, sanitation, and hygiene (WHO, 2019). The findings on poverty and basic need priorities underscores the importance of addressing poverty and socio-economic disparities to improve health outcomes and reduce inequalities (WHO, 2010). Findings on education being key aligns with the WHO's recommendation to address social determinants of health through education and empowerment strategies (WHO, 2008).

The qualitative analysis provides valuable insights into the complex interplay of factors influencing hygiene practices among breastfeeding mothers in Mandera County. By exploring participants' perspectives and recommendations, this study offers actionable insights for policymakers, healthcare providers, and community stakeholders to design targeted interventions and policies aimed at improving maternal and child health outcomes and reducing hygiene inequalities in the community.

CHAPTER FIVE
SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This Chapter provides a comprehensive overview of the key findings, conclusions drawn from the study, and recommendations for policy, practice, and further research based on the results.

5.2 Summary

The study aimed to investigate factors associated with hygiene practices among breastfeeding mothers attending the Maternal and Child Health (MCH) clinic at Mandera County Referral Hospital. Through a mixed-methods approach, the study examined the knowledge, attitudes, practices, and barriers related to hygiene among breastfeeding mothers in Mandera County, Kenya. The following summary highlights the key findings and insights gained from the study.

The study revealed that breastfeeding mothers in Mandera County exhibited varying levels of knowledge and adherence to hygiene practices. While the majority of participants reported awareness of hygiene practices, such as handwashing before and after breastfeeding, there were disparities in the frequency and consistency of these practices. Factors influencing hygiene practices among breastfeeding mothers included socio-cultural beliefs, economic constraints, and access to resources. Cultural norms and traditions often shaped perceptions of cleanliness and influenced hygiene behaviors, with certain practices conflicting with modern hygiene recommendations.

Access to clean water, sanitation facilities, and hygiene products emerged as significant challenges faced by breastfeeding mothers in Mandera County. Limited availability and affordability of these resources hindered mothers' ability to maintain optimal hygiene practices, particularly in rural and marginalized communities. Additionally, socio-economic factors, such as poverty and lack of education, intersected to exacerbate hygiene-related inequalities, highlighting the need for targeted interventions to address underlying determinants of poor hygiene.

The role of healthcare providers in promoting hygiene practices among breastfeeding mothers was also explored. While healthcare facilities, such as the MCH clinic, served as important platforms for education and support, there were opportunities to enhance the delivery of hygiene promotion services. Participants emphasized the importance of integrating hygiene education sessions and practical demonstrations into routine clinic visits to empower mothers with the knowledge and skills needed to practice good hygiene.

The study findings underscore the complex interplay of factors influencing hygiene practices among breastfeeding mothers in Mandera County. Addressing hygiene-related challenges requires multi-sectoral collaboration, community engagement, and targeted interventions that consider socio-cultural, economic, and healthcare-related factors. By promoting awareness, improving access to resources, and strengthening healthcare delivery systems, stakeholders can support breastfeeding mothers in adopting and sustaining hygienic practices, ultimately contributing to improved maternal and child health outcomes in the community.

The study provides valuable insights into the factors influencing hygiene practices among breastfeeding mothers in Mandera County and lays the groundwork for future interventions and research in this area. By addressing the identified barriers and leveraging existing resources and networks, stakeholders can work towards enhancing hygiene promotion efforts and advancing maternal and child health in Mandera County and similar settings.

5.3 Conclusion

The study sheds light on the multifaceted nature of hygiene practices among breastfeeding mothers attending the Maternal and Child Health (MCH) clinic at Mandera County Referral Hospital. Through a comprehensive analysis of factors influencing hygiene behaviors, the study underscores the importance of addressing socio-cultural, economic, and healthcare-related determinants to improve maternal and child health outcomes in the community.

The findings highlight the need for targeted interventions aimed at promoting awareness, enhancing access to resources, and strengthening healthcare delivery systems. By integrating hygiene education sessions into routine clinic visits, healthcare providers can empower breastfeeding mothers with the knowledge and skills needed to practice good hygiene effectively. Additionally, community-based initiatives, partnerships with local organizations, and advocacy efforts are essential to address underlying socio-economic disparities and ensure equitable access to clean water, sanitation facilities, and hygiene products.

Furthermore, the study emphasizes the pivotal role of cultural beliefs and gender dynamics in shaping hygiene practices among breastfeeding mothers. Strategies that respect and incorporate local customs while promoting evidence-based practices are essential to effectively engage communities and drive behavior change. Moreover, addressing structural barriers, such as poverty and lack of education, requires concerted efforts from policymakers, stakeholders, and community leaders to create enabling environments for healthy behaviors.

5.4 Recommendations

In light of the study's findings, several recommendations are proposed to guide future interventions and research. These include:

1. Strengthening hygiene promotion initiatives within healthcare settings, including the integration of practical demonstrations and education sessions into routine maternal and child health services.
2. Investing in water, sanitation, and hygiene infrastructure to improve access to clean water and sanitation facilities in underserved communities.
3. Enhancing community engagement and empowerment through participatory approaches that prioritize the voices and experiences of breastfeeding mothers.
4. Conducting further research to explore the long-term impacts of hygiene interventions on maternal and child health outcomes, as well as the effectiveness of culturally tailored approaches in promoting hygiene practices.

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