MOTHERS' KNOWLEDGE AND PRACTICES OF KEY CLINICAL STEPS OF SUCCESSFUL BREASTFEEDING AT JARAMOGI OGINGA ODINGA TEACHING AND REFERRAL HOSPITAL, KENYA

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A thesis submitted to the School of Public Health, Biomedical Science and Technology in Partial Fulfillment of the requirements for the Award of the Master of Science Degree in Public Health Nutrition of Masinde Muliro University of Science and Technology.

October, 2025

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DEDICATION

To my grandmother Rosalina Nyapala, uncle Nyadolo Rori, and stepmother Susan Agutu for your parental role in my life, including support throughout my academic journey.

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It is through the guidance of the Almighty God that I got to accomplish this work. I would like to give a special thank you to the supervisors, Dr. Jane Situma and Dr. Lucy Mutuli. Moreover, I am thankful for the efforts of all the lecturers and other staff at the Department of Nutritional Sciences.

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A big thank you!

Wycliffe Otieno Agutu

ABSTRACT

The Successful Breastfeeding steps of Baby Friendly Hospital Initiative (BFHI) is the model of the international standard of promoting breastfeeding rates. Nonetheless, sub-optimal breastfeeding is one of the greatest public health concerns that cause almost a half of all the deaths of children worldwide. The situation is especially acute in the area where this study was conducted; Jaramogi Oginga Odinga Teaching and Referral Hospital (JOOTRH) that has reported the lowest rate of exclusive breastfeeding; only 50 per cent, which is way below the BFHI standard of 80 per cent. Although this is but one of the reported steps to successful breastfeeding (Exclusive breastfeeding), the gap points at key failures in implementing successful breastfeeding. Thus, this research was conducted to evaluate the knowledge of mothers and identify the practice of the key clinical steps of Successful Breastfeeding and establish the relationship between the knowledge and practice of these steps. The design used was a cross-sectional one and comprised of 79 breastfeeding mothers in JOOTRH selected by systematic sampling. A researcher-administered questionnaire and an observational checklist were used to collect data. The patterns of knowledge and practice were described by descriptive statistics (frequencies and percentages), whereas binary logistic regression was used to assess the correlation between knowledge and practice, with maternal age, education, and marital status as control variables. The results indicated a strong knowledge-practice gap. The knowledge of the mothers on most of the steps was according to the WHO/UNICEF requirements. These include step 3 (94.9%), step 6 (93.7%), step 7 (94.9%), step 8 (92.4%), and step 9 (81%), However, this success masked a severe deficit in actionable skills on step 3 (11.4%), step 4 (72.2%), step 5 (38%), and step 10 (21.5%). Furthermore, there was no statistically significant relationship between knowledge and corresponding practices for any of the steps ($p > 0.05$) according to the Logistic regression analysis results. However, negative directional associations were observed in step 3 (AOR =0.132) and step 6 (AOR =0.702) while other steps showed a while positive directional association (AOR > 1). The findings show that mothers' knowledge was not sufficient to translate into skills to promote successful breastfeeding. Strengthening BFHI implementation should therefore prioritize hands-on, skill-based coaching by nurses and integrate post-discharge breastfeeding support through Community Health Volunteer (CHV) programs to ensure sustained practice and improved child survival outcomes. There is a need for longitudinal studies to assess the sustainability of breastfeeding post-discharge.

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ABBREVIATION AND ACRONYMS

BFHI	Baby-Friendly Hospital Initiative
EBF	Exclusive Breastfeeding
IYCF	Infant and Young Child Feeding
JOOTRH	Jaramogi Oginga Odinga Teaching and Referral Hospital
KAP	Knowledge, Attitude and Practice
KDHS	Kenya Demographic and Health Survey
MOH	Ministry of Health
MCH	Maternal and Child Health
UNICEF	United Nations Children's Fund
W.H.O.	World Health Organization

OPERATIONALIZATION OF TERMS

Breastfeeding: refers to the observed practice of the mother feeding her infant with her own breast milk.

Early Initiation of Breastfeeding (EIBF): refers to the breastfeeding mother placing the infant to the breast to suckle within the first hour of birth. This involves the mother's self-report in the post-natal period.

Exclusive Breastfeeding (EBF): refers to an infant receiving only breast milk (from the mother, expressed milk, or a wet nurse) and no other food or fluid, except drops, syrups, or medicine, for a period of 6 months. This was self-reported by the breastfeeding mother.

Optimal Breastfeeding: refers to recommended to the recommended practice where breastfeeding mothers breastfed their babies exclusively for the first six months of life, followed by the introduction of nutritionally adequate and safe complementary foods starting at six months, while continuing breastfeeding up to two years or beyond.

Successful Breastfeeding: In this study, this refers to the key clinical practices steps outlined in the Baby Friendly Hospital Initiative (BFHI), excluding the first two steps (institutional commitment and staff training).

Practice: refers to the specific, observable actions and self-reported skills of the breastfeeding mother toward achieving successful breastfeeding.

Knowledge: refers to the mother's awareness and understanding of the key clinical steps of successful breastfeeding and related optimal feeding practices.

CHAPTER ONE

INTRODUCTION

1.1. Background Information

Breastfeeding is globally recognized as the most effective public health intervention to enhance child nutrition, health, and survival, providing necessary nutrients and antibodies that reduce the risk of respiratory illnesses, diarrhea, and overall child mortality (Gupta et al., 2023; Couto et al., 2020). The best practice of breastfeeding involves a number of steps that should be followed: early initiation, six months of breastfeeding only, and breastfeeding with age-related, complementary foods to the age of two (Akinola et al., 2022). The non-conformance to these steps results in poor outcomes of breastfeeding.

To encourage and maintain such practices, the World Health Organization (WHO) and the United Nations Children Fund (UNICEF) developed the Baby Friendly Hospital Initiative (BFHI) in 1991 and stipulated Ten Steps of Successful Breastfeeding. The adequate application of the BFHI framework depends crucially on the knowledge and practice of mothers on the main clinical steps (Steps 3-10). Step 3 (management and importance of breastfeeding), step 4 (skin to skin contact and breastfeeding initiation as early as possible), step 5 (initiation and maintenance of breastfeeding and associated challenges), step 6 (only breastmilk breastfeeding), step 7 (24 hours day and night stay with the baby), step 8 (cues recognition and responding), step 9 (awareness of the risks of using of teats, feeding with bottles and pacifiers) and step 10 (help with breastfeeding after discharge) (Lestari, 2020).

Mothers' knowledge of these key clinical steps of successful breastfeeding is key to influencing their practices of the steps, further improving breastfeeding, child nutrition, and child health outcomes; helping reduce risks of breastfeeding-related child morbidity and mortality (Kehinde

et al., 2023). According to Kivlighan et al. (2020), when successful breastfeeding is well implemented in hospitals designated as baby-friendly leads there is longer breastfeeding duration. According to Das et al. (2023), mothers who are not knowledgeable about breastfeeding support contained in the key clinical steps of successful breastfeeding are unlikely to practice steps of successful breastfeeding. Similarly, Oueidat et al. (2020) found that a lack of knowledge in key areas of successful breastfeeding is linked to poor practices.

However, despite efforts to implement successful breastfeeding steps, breastfeeding rates are still low both globally, regionally and nationally, leading to high breastfeeding-related child morbidity and mortality. Poor knowledge of successful breastfeeding has also been linked to suboptimal breastfeeding and high child mortality (WHO, 2023). Globally, as of 2023, only 48% of children are exclusively breastfed; these are those below six months, and 46% are initiated on breastmilk as soon as possible after birth. This is still below the Global Assembly Target of 50% and 70% respectively (UNICEF, 2023). In the developing world, only 39% are exclusively breastfed in Africa (Lisna et al., 2019). In Kenya, the exclusive breastfeeding rate is at 60%, shy of the global target of 70% (UNICEF, 2023). Further, about 91% of children experience delayed breastfeeding; across regions in Kenya, the Nyanza region, where the study was done, has about 95.3% of children having delayed breastfeeding (Kimani-Murage et al., 2021).

The low breastfeeding rates are a public health concern, leading to 45% of child mortality (World Health Organization, 2022). Globally, infant mortality stands at 29 deaths per 1000 live births, 74 deaths per 1000 live births is the under-five mortality rate that has been recorded in Africa, the rate of under-five mortality is with Kenya recording 37.2 deaths per 1000 live births.

In Kenya, the highest child mortality rate (82 deaths per 1000 live births) has been recorded in Nyanza (UNICEF, 2024).

Despite these worrying statistics, there is limited literature on mothers' knowledge and practices of key clinical steps of successful breastfeeding that can inform best practices, improve breastfeeding, and reduce related illnesses and deaths within the Kenyan context currently. It is in this line that this study focuses on evaluating mothers' knowledge of these steps, assessing their practices, and establishing if there is any link between the knowledge and practices of successful breastfeeding.

1.2. Problem Statement

Optimal breastfeeding is globally recognized as the most effective single intervention for preventing child mortality, although sub-optimal breastfeeding continues to be one of the most pressing global issues in the field of public health, as they lead to almost 50 percent of all child mortality related to infectious diseases in the world. It is estimated that of all the infants in the world only 48 percent are exclusively breastfed and the figure even less in Africa at 39 percent despite international efforts.

This is also a worrying case in Kenya. In spite of the national exclusive rate of breastfeeding of 60, in the Nyanza region where this study was done, child mortality rate is the highest in the country at 82 deaths per 1, 000 live births which is more than twice that of the country. Such statistics are indicative of a severe institutional failure in passing necessary skills of breastfeeding.

At the facility level, Jaramogi Oginga Odinga Teaching and referral hospital (JOOTRH), which is a specific Baby-Friendly Hospital Initiative (BFHI) consistently reported 50 % exclusive breastfeeding rates, which is below the recommended 80% BFHI benchmark (Moraa, 2019).

Hence, the main problem of this research is the fact that in the Nyanza region and at JOOTRH, sub-optimal practices in breastfeeding remain, and this points at a possibility that the maternal knowledge regarding the clinical practices of the most important clinical Steps of Successful Breastfeeding is not transferred into the practice. Therefore, an urgent need to systematically evaluate mothers' knowledge and skills of these steps, and the relationship between mothers' knowledge and their corresponding practices of the Steps.

1.3. Objectives of the Study

1.3.1. Broad Objective

To evaluate mothers' knowledge and determine practices of key clinical steps of successful breastfeeding at Jaramogi Oginga Odinga Teaching and Referral Hospital.

1.3.2. Specific Objectives

1. To evaluate mothers' knowledge of key clinical steps of successful breastfeeding at Jaramogi Oginga Odinga Teaching and Referral Hospital.
2. To determine mothers' practices of the key clinical steps of successful breastfeeding at the Jaramogi Oginga Odinga Teaching and Referral Hospital.
3. To establish the relationship between mothers' knowledge and practices of key clinical steps of successful breastfeeding.

1.4. Research Questions

1. What is the level of mothers' knowledge of the key clinical steps of successful breastfeeding at Jaramogi Oginga Odinga Teaching and Referral Hospital among mothers?
2. What are the mothers' practices of key clinical steps of successful breastfeeding at Jaramogi Oginga Odinga Teaching and Referral Hospital among mothers?
3. What is the relationship between mothers' knowledge and practices of key clinical steps of successful breastfeeding at Jaramogi Oginga Odinga Teaching and Referral Hospital among mothers?

1.5. Justification of the Study

By critically analyzing the correlation between maternal knowledge and practice of the most critical clinical Steps of Successful Breastfeeding at Jaramogi Oginga Odinga Teaching and referral hospital (JOOTRH), the study is a fundamental source of evidence that can be used in policy formulation, clinical practice as well as research.

In terms of policy, the results showing the relationship between the theoretical knowledge and the practical skill informs the policy makers in the Ministry of Health and the county by stating the areas that need to be reinforced in BFHI certification and monitoring procedures. To be more precise, it undergoes a transition of the purely didactic education toward supervised, skill-based competency testing as an obligatory element of maternal discharge and post-discharge follow-up and enhances the quality of breastfeeding services in baby-friendly establishments.

The study also supports clinical practice, the research finds out the critical areas of failure during the transfer of skills among health workers and shows the necessity of practical demonstrations of skills and the use of return demonstrations instead of informational ones. It

also comments on the need to include post-discharge breastfeeding support in Community Health Volunteer (CHV) programs in order to sustain the practice outside the hospital setting.

Academically, this study provides an empirical study on a high-mortality setting in sub-Saharan Africa, which is missing in the existing literature on the effectiveness of knowledge transfer among influential clinical behaviors of successful breastfeeding. Future longitudinal and mixed-methods researches relying on the study will have the basis of investigating structural, cultural, and institutional restraints preventing the successful implementation of the main clinical Steps of successful breastfeeding.

1.6. Significance of the Study

The value of this research on mothers' knowledge and practices related to the most key clinical Steps of Successful Breastfeeding is that it will help highlight a significant knowledge gap in the practice of the implementation of the Baby-Friendly Hospital Initiative (BFHI) in the high-mortality area, represented by sub-optimal breastfeeding, Jaramogi Oginga Odinga Teaching and Referral Hospital (JOOTRH). The results produce evidence to be used by both mothers, health workers, and policymakers which is key to improvements.

Policy wise, the research gives information regarding the relationship between knowledge and practice, and this data can give insights on whether the current strategies of BFHI education are translated into actual behavioral results. The evidence will also help the Ministry of Health and County Health Management Teams to come up with more effective and context-specific policies to tackle breastfeeding and to incorporate post-discharge assistance as part of Community Health Volunteer programs to enhance continuity of breastfeeding.

In the clinical practice perspective, the study provides the hospital management and maternity personnel with baseline information such that may be used to define the particular steps where

mothers demonstrate knowledge or practice deficits in order that the institution can refocus teaching efforts on more practical, skills-based instruction such as proper positioning and attachment.

In the end, the research assists in enhancing maternal competency, fostering optimal breastfeeding, and lowering morbidity and mortality of children in the Nyanza area. In addition to the local significance, the study have an important contribution to the academic sphere by offering the context-specific background of future research that would address the issue of maternal health literacy, behaviour change, and sustainability of the baby-friendly practice within hospitals in Kenya and other countries and also contribute to Sustainable Development Goal Number Three on Good Health and Well-being (Heidkamp et al., 2021).

1.7. Limitations of the Study

The study has the following limitations that should be considered when reading the results of the study. The main issue that was faced was Recall Bias since the study was based in part on the recollection of the subjects of some past breastfeeding incidences, which may result in memory error in reporting. This limitation was directly management by ensuring that the mother interviews take place immediately after delivery to ensure that there is minimal time gap between the occurrence of the event and the data collecting exercise. In addition, the task of data collection was strengthened by the application of direct, real-time observation of the maternal practices whenever possible (e.g., positioning, attachment, rooming-in during the hospital stay) and the utilization of the highly structured questionnaire to create uniformity in all the reported responses.

The other possible limitation was the Social Desirability Bias. Given that the study was conducted in a Baby-Friendly Hospital Initiative (BFHI) institution, there was a natural risk of

having mothers over-reporting positive knowledge or successful practices because of the social pressure to give the right answers. In response to this, research assistants were highly trained on issues of rapport building, non-judgmental interviewing and assurance of confidentiality and anonymity, an aspect that contributed to the creation of a conducive environment that enabled the mothers to be more comfortable in giving honest answers.

Lastly, the study is a Cross-Sectional Design, thus, capturing the knowledge and practice at one, single, and fixed point in time. Such a design inevitably precludes the possibility of monitoring the sustainability of practices over time or gain a definite cause-effect relationship. This intrinsic shortcoming is admitted by clearly setting the research to evaluate knowledge and practices during the immediate post-natal period with a suggestion that future longitudinal research should be a follow-up on the long-term outcomes.

1.8. Delimitation of the Study

The study was limited to address maternal factors, not systemic or staff competence issues. Geographically, the findings are strictly limited to breastfeeding mothers who delivered at Jaramogi Oginga Odinga Teaching and Referral Hospital (JOOTRH) during the defined data collection period. Consequently, the findings regarding the knowledge-practice gap are specific to the protocols of this Baby-Friendly designated facility and should not be generalized across all hospitals in the region. Furthermore, the use of a cross-sectional design delimits the study from exploring longitudinal outcomes, such as breastfeeding duration at six months, or the impact of external community factors occurring after the mother leaves the hospital.

1.9. Theoretical framework

The study adapted the KAP (Knowledge, Attitude, and Practice) framework to determine the mothers' knowledge and practices of the key clinical steps of successful breastfeeding, and how knowledge influences these practices as suggested by Liao et al. (2022). Knowledge

determines behavioral change (a practice). Knowledge is the understanding of information and includes; tacit knowledge, scientific and social scientific knowledge, local knowledge, and self-reflective knowledge; successful breastfeeding as contained in the BFHI falls under scientific knowledge as it involves scientific evidence of breastfeeding benefits of the mother and the child, it also revolves around social scientific knowledge taking into account cultural, social and cultural factors that affect breastfeeding (UNICEF, 2023). In terms of the knowledge-practice relationship, it is important to know about successful breastfeeding to possess a skill that is required for behavior change (practice of steps of successful breastfeeding). The framework also helps to examine the relationship between knowledge and practices, and quantify what is known (the knowledge) against what is done (practice) to successful breastfeeding (Liao et al., 2022). The framework is also important in identifying the knowledge gaps regarding successful breastfeeding and the practice patterns. Furthermore, it is important to understand the role of demographic factors of sex, education level, and marital status as barriers or influencers of the adoption of the successful breastfeeding practice; these are confounding factors that may influence the outcome (practices of successful breastfeeding) (Habibi et al., 2020). Based on this framework, it was assumed that if a mother is knowledgeable about successful breastfeeding, they are more likely to practice these steps correctly.

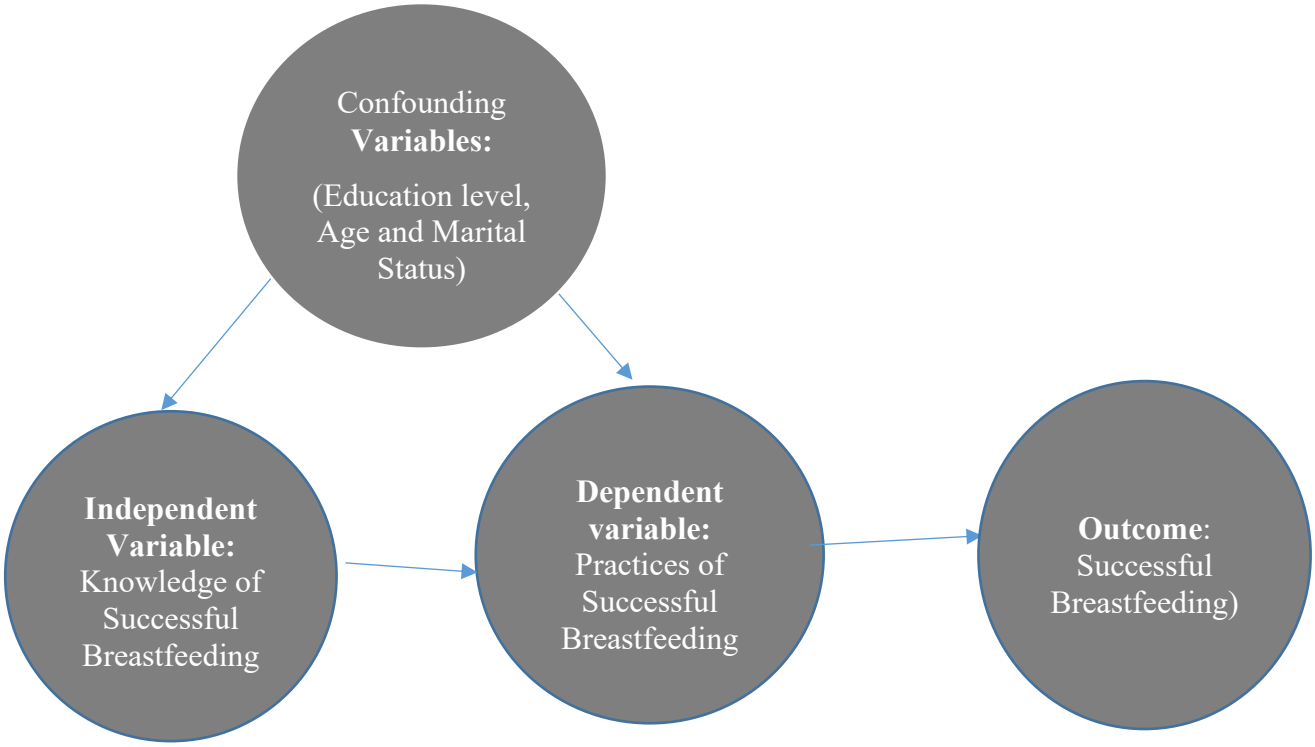


Figure 1.9.1: *Modified KAP Theoretical Framework (Liao et al., 2022)*

CHAPTER TWO

LITERATURE REVIEW

2.1. Introduction to Literature Review

The structure of this chapter starts with a critical analysis on the significance of optimal breastfeeding, breastfeeding performance in the world, in the regions, and in the country. It similarly examines research papers that report on the knowledge and practices of mothers on the effective breastfeeding Steps with special attention to the most important clinical components (Steps 3-10) that practice deficiencies are frequently discovered. Lastly, the chapter concludes with the synthesis of the existing literature that specifically focuses on the knowledge-practice gap in high-burden states such as sub-Saharan Africa, and finally, the research gap that is identified which the research seeks to address at Jaramogi Oginga Odinga Teaching and Referral Hospital.

2.2. Importance of Optimal Breastfeeding

Early initiation of breastfeeding during the first hour of birth, exclusive breastfeeding during the first six months, and continued breastfeeding with proper complementary feeding until two years and more, is an optimal way of breastfeeding that has become one of the pillars of child survival and maternal health (Gupta et al., 2023). It has solid scientific backing in support of its significance, although the contexts across the board indicate both differences in outcomes and success of implementation.

In the world, breastfeeding is identified as one of the most economically efficient measures of infant morbidity and mortality prevention (Abdulla et al., 2022). The authors point to the immunological superiority of breast milk and the protection of diarrheal and respiratory infections that is provided by the oligosaccharides and antibodies (Couto et al., 2020). Kim and Choi (2020) build upon this fact by linking breastfeeding to cognitive performance and higher

IQ scores in adulthood. But, even though both articles confirm the biological and developmental advantages of breastfeeding, Abdulla et al. (2022) majorly concentrate on short-term immunological consequences. Conversely, Kim and Choi (2020) emphasize neurodevelopmental and socioeconomic outcomes in the long run. Such a disparity highlights the multidimensional nature of the effects of breastfeeding that goes beyond direct nutrition.

Recent researches even make this understanding more complicated. Scime et al. (2023) offer interesting data indicating the relationship between breastfeeding and decreased risks of obesity and metabolic diseases in adulthood, making the finding consistent with the previous works but indicating that the protective effect of breastfeeding is facilitated by lifestyle and socioeconomic factors. Conversely, a review by Rollins et al. (2021) warns that the long-term advantages of breastfeeding are overestimated in high-income environments in which other factors such as education and access to healthcare are significant. This opposition brings up the debate that is going on, which is whether the advantages of breastfeeding are universally biological or conditionally reinforced by health systems and maternal education levels.

2.3. Global, Regional and National Breastfeeding Performance

Despite Although there is strong international evidence on the advantages of breastfeeding, performance targets are always lower than those recommended internationally. Approximately 48% of all babies in the world are placed in the recommended first six months of breastfeeding, which is significantly lower than the recommended rate of 70 per cent by the World Health Assembly in 2030 (Boccolini et al., 2023). Such stagnation on the global scale is rather adherence to the structural and behavioral obstacles than ignorance. As an example, Jama et al. (2020) approximate the number of infants who do not receive the first hour of breastfeeding as almost 78 million newborns, which reflects the systemic failure of early initiation in the context

of extensive health promotion efforts. Boccolini et al., in their turn, focus on the impact of global policy inertia and limited monitoring systems, whereas Jama et al. (2020) point to the inefficiencies of health systems and the lack of staff competence in delivering healthcare services as the primary reasons, which, in its turn, indicates that both governance and clinical practice contribute to the poor outcomes of breastfeeding on their own.

These systemic challenges are enhanced by socio-cultural and economic constraints. According to Rollins et al. (2021), the aggressive promotion of breastmilk substitutes and insufficient policies on maternity protection policies throughout the world have made the early cessation a norm even in cases where the mother initiates breastfeeding. Conversely, Bartick et al. (2021) argue that the issue is not necessarily policy-specific but follows gendered labor formations that undermine the value of unpaid care giving and therefore constrain the ability of mothers to continue with exclusive breastfeeding. This analytical divergence indicates that both institutional and societal inequities have contributed to the existence of suboptimal breastfeeding and a multidimensional response should be developed that does not just focus on the health sector.

These global trends are reflected in the National data published by KNBS (2022) but with even stronger declines in exclusive breastfeeding (EBF) duration. Its initiation rates are quite high, although the percentage of infants only breastfed drops to 42% at six months of age (compared to 84.1 at one month) (Kimani-Murage et al., 2021); moreover, the national figures are even worsened by regional disparities. Such high rates of late breastfeeding initiation; up to 95.3; and infant morbidity and mortality are registered in the Nyanza region (Kimani-Murage et al., 2021). There is a variance of interpretations of this trend by scholars. Although Ochola et al. (2019) point to the workload on mothers and the myth about inadequate milk production in the culture of the studied area as the primary factors contributing to this poorer breastfeeding

outcome, Opon (2021) points out gaps in postnatal counseling and poor follow-up systems, especially on the community level. This comparison highlights the role played by both demand-side (i.e., maternal perceptions and social support) and supply-side (i.e., health service delivery and counseling) factors in early breastfeeding cessation.

On the whole, the literature is united by the opinion that suboptimal breastfeeding is not just a personal or cultural problem, but an institutional failure of policies, their execution, and social assistance. There is little empirical investigation of the association between maternal knowledge and practice in particular clinical environments, however. This disparity that is particularly high in high mortality settings such as Nyanza offers the justification of the study to investigate the knowledge-practice relationship within BFHI framework in the Jaramogi Oginga Odinga Teaching and Referral Hospital.

2.4. Mothers' Knowledge of the Steps of Successful Breastfeeding

In order to tackle the suboptimal breastfeeding and improve the continuation of breastfeeding in clinical environments, the World Health Organization and the United Nations Children Fund developed the Baby-Friendly Hospital Initiative (BFHI) that includes the Ten Steps of Successful Breastfeeding. This is the major framework in which mothers learn about breast feeding and skills. The literature however exhibits some contradictory reports on the effectiveness of this knowledge transfer and retention. Agbozo et al. (2019) point out that the key connection between institutional compliance and individual practice is maternal knowledge that results in hospital-based interventions that are not limited to the discharge. Nevertheless, this optimism is contrasted by Chen et al. (2020), who note that education is focused on the immediate postpartum in most facilities and is rarely supported by ongoing follow-up, which leads to low knowledge retention and performance of skills.

Although the majority of health institutions report being compliant with administrative standards, including policy documentation (Step 1) and staff training (Step 2), research indicates that there is always a gap between institutional certification and learning outcomes in reality (learned by mothers). According to Ojigo (2019), the biggest Kenyan hospitals were only 40 percent in terms of BFHI compliance, with Steps 3, 5 and 10 having the largest gaps in maternal knowledge, which needed practical skills and continued support. This is unlike results reported by Akinola et al. (2022) in Nigeria whose institutional compliance with BFHI guidelines was rather high, but mothers demonstrated a low level of knowledge on effective position and attachment. The comparison highlights that even compliance with policies cannot ensure behavioral competence of mothers but instead, it depends on how knowledge is delivered that will have an effect on the practice.

Researchers also disagree on the BFHI steps that are mostly influenced by knowledge gaps. Compared to Step 6 (exclusive breastfeeding), Step 9 (avoidance of teets/pacifiers), Akinola et al. (2022) focus on Step 5 (improper positioning), which is frequently accompanied by nipple pain and premature termination, whereas Song et al. (2023) pay attention to Step 6 (exclusive breastfeeding) and Step 9 (avoidance of teets/pacifiers) as especially weak in mothers with low educational levels. The work by Song also compares with that of Couto et al. (2020), who believe that the myths about supplemental feeding are not always overcome even by educated mothers and that sometimes, socio-cultural beliefs can dominate formal education in the context of determining knowledge. These opposite points of view show that the gaps in knowledge are not only situation-dependent but also multidimensional based not only on clinical education but also on social conditioning.

This complexity is also supported by other studies. Lestari et al. (2020) discovered that BFHI implemented hospitals in Indonesia had a longer time to breastfeed because of systematic, skill-based training, and Moraa et al. (2019) discovered that at Jaramogi Oginga Odinga Teaching and Referral Hospital (JOOTRH), the prevalence of exclusive breastfeeding was relatively low (50%). The comparison implies that knowledge among mothers, without further support by regular follow-ups and supervision, is not as practical as it could be.

Combined, the analyzed literature leads to a single conclusion, and maternal knowledge is one of the conditions of successful breastfeeding, and its success is determined by the method and time of its transfer and reinforcement and contextualization. Nonetheless, the extent of mapping the distribution of this knowledge across significant clinical Steps in a single clinical setting has not been done extensively. The proposed paper, then, aims to address that gap by evaluating the extent, quality, and consistency of knowledge of mothers about breastfeeding at JOOTRH and produce the evidence that can inform the specific, skill-based educational interventions to reduce the current gap between the policy and practice of breastfeeding by mothers.

2.4.1. Mothers' Practices of the Steps of Successful Breastfeeding

On the one hand, the promotion of breastfeeding has a basis in maternal knowledge, but on the other hand, the shift between the knowledge and its regular practice is the ultimate test of the Baby-Friendly Hospital Initiative (BFHI). The implements of different settings show that there is always a gap between mothers with theoretical knowledge and what they actually do in practice, an implementation gap that weakens the effectiveness of breastfeeding results (Beggs et al., 2021). Therefore, whereas the above section emphasised the cognitive aspect of the main clinical Steps of BFHI, this one critically looks at the behavioural aspect and compares between

situations where institutional instruction can be converted easily to maternal behaviour and situations where systemic and environmental obstacles hinder behavioural compliance.

Mothers around the world are very knowledgeable on the issues of early initiation, exclusive breastfeeding and rooming-in; however, the issue of continuity in such practices remains unachievable. In the literature, this difference is not due to the unwillingness of the mothers but rather a result of systemic inefficiency and insufficient clinical care in the postnatal phase (Lyellu et al., 2020). The comparison of hospitals with BFHI protocols implemented completely and partially has shown that the hands-on system, based on the skill, achieves significantly better results than the verbal or didactic one (Beggs et al., 2021). Here, the differences between policy compliance and behavioral translation are not intentional but in terms of quality of implementation.

Steps 4, 5 and 7, which regulate early practice reflecting skills, have the most significant clinical and systemic weaknesses. The situation with Step 4 (early initiation of breastfeeding) is still high in Sub-Saharan Africa, with Nyanza recording a maximum of 95.3 percent start delays among children, which correlates with worse lactation outcomes and increased neonatal morbidity (Kimani-Murage et al., 2021). These results underscore the fact that maternal practice is more an institutional preparedness than the effort of the individual. Equally, the gap between the theoretical knowledge and technical skill can be seen in Step 5 (teaching proper positioning and attachment). Beggs et al. (2021) and Kimani-Murage et al. (2021) both mention that hands-on demonstrations are very effective in decreasing breastfeeding early cessation.

The second axis of comparison pitting initiation and sustainment, the research findings show that sustainment at Steps 6, 9, and 10 is weak even in cases in which early breastfeeding practices are firmly established. The rapid drop in the exclusive breastfeeding coverage of 84.1

in the first month to 42 at six months (Kimani-Murage et al., 2021) is similar to the situation in Ghana and Indonesia, where early compliance is lost unless followed by the community (Lestari, 2020; Akinola et al., 2022). Such falls are usually induced by mothers returning to workforce, socio-cultural time strains and the feeling of milk insufficiency and the root causes of such barriers are structural rather than knowledge based which is the major hindrance to the continued practice. Additionally, although the use of pacifiers and teats is prohibited in the institution in Step 9, this practice is still very common after discharge, which indicates poor continuity between the hospital and home settings (Lestari, 2020). Moreover, the step 10, the provisions of post-discharge and community support, turns out to be a significant distinguishing factor between a short-term and long-term success. According to comparative studies, highly-referral countries and those with an adequate system of peer-support, including Thailand and Brazil, have long exclusive breastfeeding periods (Chen et al., 2020). Conversely, Ojigo (2019) study, conducted in Kenya, is all along in indicating that brief follow-up counseling negates the strengthening of good practices. Therefore, non-adherence by the mother is frequently an indication of discontinuity of the institution, instead of failure.

In general, the literature leads to one major conclusion: the suboptimal practice of mothers on the most important clinical Steps is one of the signs of structural and procedural ineffectiveness but not lack of motivation or knowledge. When the compliant and non-compliant situations are compared, it becomes clear that a combination of systems is needed, a system that will tie the policy of the hospital to the actual skills of learning and the continuous support of the community. In the Jaramogi Oginga Odinga Teaching and Referral Hospital, where exclusive breastfeeding is still at 50 per cent (Moraa, 2019), this study thus aims at establishing which of the key clinical Steps constitute the most underperforming maternal practice, change dynamics

compared to the global best practice to inform context-based interventions based on the standards of the BFHI.

2.5. Association between Mothers' Knowledge and Practices of Key Clinical Steps of Successful Breastfeeding

The literature is categorical that maternal knowledge is one of the pre-requisites to successful breastfeeding practice. Nonetheless, scientists are still split on whether this association is strong and what it is. Whereas there are studies where sufficient knowledge is almost always followed by appropriate practice, there are studies that show that even knowledgeable mothers are unable to maintain the best breastfeeding practices. Indicatively, Lok et al. (2020) established that mothers who were well-informed (understanding breastfeeding physiology and positioning technique) had a high rate of early initiation and exclusive breastfeeding. Their results are consistent with the theoretical background of the Baby-Friendly Hospital Initiative (BFHI) that conceptualizes maternal knowledge as a transformational one that increases self-efficacy, develops confidence, and leads to consistent behavior (Mothukuri et al., 2021). In this perspective, knowledge can be both cognitive and motivation capital: when mothers know how and why to breastfeed, they have every chance to succeed and be sure.

Other scholars on the other hand warn that knowledge is not equal to practice. As Kinshella et al. (2021) argue, there are many systemic, cultural, and emotional factors that tend to weaken the influence of knowledge on our real behavior. They established that even the mothers who succeeded in parroting BFHI principles would often switch to mixed feeding as soon as they were placed under social pressure, were too tired or had to work. On the same note, Thompson et al. (2024) note that long-term compliance with exclusive breastfeeding is predicted by psychological preparedness and maternal self-efficacy rather than informational awareness.

This implies that internal, confidence, motivation and external, institutional and social conditions moderate the relationship between knowledge and practice..

Combined, these opposite views make it look like a complex picture: knowledge is the cornerstone, but conversion into practice needs an encouraging environment. During their stay in hospitals, mothers require practical demonstrations that are consistent, hands-on, and reinforcement of learning during difficult times as well as postnatal follow-up. In the absence of this continuum of support, even the learned mothers tend to revert to the suboptimal feeding patterns. Thus, both knowledge and practice should be regarded as interdependent spheres; where knowledge functions as a catalyst to intention and the application as maintenance of action.

2.6. Summary of Gaps from Literature Reviewed

The literature has provided a consistent understanding of the world of the importance of breastfeeding as a pillar of child survival and maternal wellbeing. Nevertheless, there are significant gaps on how maternal knowledge is converted into the long-term breastfeeding practices, especially in the application of clinical models like the BFHI. Although many of the studies have confirmed the advantages of optimal breastfeeding (Victora et al., 2016; Gupta et al., 2023), few have gone beyond the descriptive analysis of exploring the mechanisms that intertwine the linkage between knowledge, clinical support, and maternal behavior in a real-world hospital setting.

Majority of Kenyan researches have focused on exclusive parental breastfeeding measures or the time of initiation without considering the wider range of clinical measures to support effective breastfeeding implementation. The existing body of research is likely to distract knowledge and practice into individually isolated indicators instead of investigating them as

interrelated aspects of behavior change in the context of the Baby-Friendly Hospital Initiative (BFHI). Subsequently, little empirical data is available to evaluate the overall knowledge and practical application of the Key Clinical Steps by mothers in the Baby-Friendly designated hospitals like Jaramogi Oginga Odinga Teaching and Referral Hospital (JOOTRH).

Moreover, even though moderating influences like maternal confidence, institutional support, and post-discharge follow-up are studied in international literature more and more (Thompson et al., 2024; Kinshella et al., 2021), similar studies in Kenya have not been conducted. Very little local research has embraced the use of analytical models that can help to isolate the knowledge to practice relationship or reveal which particular steps will be most likely to fail. Also, previous studies have not given special attention to the contextual variables, including socio-economic status, parity, and maternal workloads, which can mediate this relationship.

Overall, the existing literature indicates that there are three main gaps: (1) the absence of combined evaluation of maternal knowledge and practical adherence to the entire Key Clinical Steps of Successful Breastfeeding; (2) the absence of detailed analysis of knowledge-practice intersectionality; and (3) the deficiency of the focus on high-burden situations such as the Nyanza where systemic and social factors act uniquely to govern breastfeeding and child-mortality rates. Filling these gaps, the current research aims at offering an empirical and context-based research on the relationship between mothers' knowledge and practices of the main clinical steps at the JOOTRH, and thus informing specific intervention to enhance the situations of clinical practice and maternal competence, as part of the BFHI model.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1. Study area

The study was done in Jaramogi Oginga Odinga Teaching and referral hospital (JOOTRH), a national teaching and referral hospital which is a publicly owned hospital in Kisumu County; Nyanza, Kenya. There are a great variety of residents in this hospital, such as urban, peri-urban, slum, and rural areas. It equally delivers high numbers (450 monthly) and covers the highest population in the Nyanza area. The research interviewees constituted the clientele: mothers that visit the hospital to avail mother-childcare services within the neighboring area, community, and the outside world, as well as the postnatal wards of the JOOTRH. The targeted hospital is the primary publicly available institution that is deemed as Baby-Friendly within the Nyanza area, the most populated area in Kenya, with 82 child deaths per 1000 live births. It is also the lowest country with the highest rate of children never breastfed and the highest rate of delayed breastfeeding among newborns (Sawe et al., 2021). Nyanza is characterized by a rich social-cultural, economic and ethnic diversity with the Luo people being the most dominant group. Trading and fishing are some of the traditional jobs in the region. The hospital site indicates that the hospital has a catchment population of above 10 million and operates 24 hrs, such as curative, preventive, rehabilitative and diagnostic (laboratory and radiology) services. The research was done at postnatal wards, maternal and child health (MCH) unit, and pediatric wards.

3.2. Study design

The research employed a hospital-based, descriptive cross-sectional study design. This design involves collecting data on the study population, postpartum mothers at Jaramogi Oginga Odinga Teaching and Referral Hospital (JOOTRH), at a single point in time. This design was

appropriate because its primary objective was to determine the prevalence (the extent) of specific characteristics: the mothers' current knowledge level and the concurrent practices of the Steps of Successful Breastfeeding.

The cross-sectional approach is ideal for assessing the current status and characteristics of a study population (Dukuzumuremyi, 2020), which is necessary for establishing the immediate rate of adherence to key steps, such as early initiation and exclusive breastfeeding support, during the postnatal period, providing a snapshot assessment of the effectiveness of the hospital's successful breastfeeding information transfer systems on the mothers at the time of their hospital stay and quantifying the association between knowledge scores and observed practice scores, which informs the development of future, more complex interventional studies.

Data collection was achieved through a mixed approach involving the administration of a structured questionnaire to capture knowledge and demographic factors, complemented by a direct observation checklist to verify the immediate practices of successful breastfeeding where feasible (WHO, 2023). This combined methodology, suggested by WHO guidelines for assessing breastfeeding practices in baby-friendly centres, ensured that the data collected was both accurate and real-time.

3.3. Study Population and Sampling Unit

This research used postpartum Mother (Mother-Infant Pair) who visits the maternity and postnatal units of Jaramogi Oginga Odinga Teaching and Referral Hospital (JOOTRH) as the primary unit of sampling. The core sampling unit is chosen to be the mother since she is the key decision maker and implementer of all clinical breastfeeding interventions, the aims of the study to quantify knowledge and compliance to the essential clinical Steps of Successful Breastfeeding will therefore be highly reliant on the personal traits and behavioral patterns.

The mother is held as the only sure source of information with regard to three critical areas: cognitive understanding of the Steps (Knowledge); her application of key behaviors, such as early initiation, proper positioning, and avoidance of artificial teats (Practice); and the Contextual Factors, including demographic and socio-economic variables, that influence her learning and practice (Song et al., 2023). By specifically focusing on the mother within the JOOTRH postpartum window, the study can directly assess the effectiveness of the Baby Friendly Hospital Initiative's knowledge transfer mechanisms in this regional setting.

3.3.1. Inclusive criteria

1. All mothers who had children under six months attending JOOTRH, as this group falls within the range of those expected to practice exclusive breastfeeding for six months.
2. Mothers who were 18 years old and above, since this is the legal age for the majority to provide consent.
3. Mothers who were breastfeeding; breastfeeding practices can be best observed among these mothers.
4. Mothers who consented to participate in this study; those who made informed decisions based on the information provided about the study.

3.3.2. Exclusive criteria

1. Mothers who could not grant informed consent to participate in this study.
2. Mothers who had a stillbirth delivery; these mothers do not practice exclusive breastfeeding.
3. A mother who was referred from another hospital and has never been to JOOTRH since knowledge and practice acquired elsewhere could introduce significant confounding bias regarding exposure to different policies, teaching

methodologies, and quality of care from other facilities. This is also a critical measure to maintain the internal validity of the study.

4. Mothers with severe illness: "severe illness" was defined using objective, clinical criteria necessary for full participation in the study. These involved mothers with impaired Cognitive Function, which could prevent them from fully comprehending the questionnaire or accurately recalling educational information, and impede Practical Demonstration of the observable breastfeeding steps as required by the observation checklist.

3.4. Study Variables

3.4.1. Dependent variable

The dependent variables are the practices of steps of successful breastfeeding.

3.4.2. Independent variable

The Independent variable is the mother's knowledge of the steps of successful breastfeeding.

3.4.3. Confounding Variables

Demographic characteristics, including age, education level, and marital status, were treated as confounding factors.

The study focused exclusively on Age, Educational Level, and Marital Status because existing literature consistently identifies these variables as the most robust, non-clinical predictors of health literacy and access to health information (Laksono et al., 2021).

3.5. Sampling design

It was carried out in Jaramogi Oginga Odinga Teaching and Referral Hospital, which was selected due to the fact that it is the biggest baby-friendly teaching and referral hospital in the Nyanza region. Systematic sampling was used and the mean number of deliveries per month (450) divided by size of sample (79) to establish the interval (6th). As a result, all the sixth

mothers that met the inclusion criteria were chosen to take part in the study; where a mother refused to take part, another mother was chosen to take part. Systematic sampling was selected due to its ability to be feasible in a high-volume clinical environment. Nevertheless, the possibility of selecting on time, including missing mothers who were discharged on a busy morning ward round, or were available only in certain nursing shifts, was also an identified risk to representativeness.

This was countered with the application of randomization of the sampling window commencement of the data collection period. Rather than starting the data collection on a specific day every day, the researcher picked at random the day to start the data collection and randomly picked the date of the first contact with the various days of the week. This was to make sure that the sample covered mothers who had been exposed to various staff, varying levels of activity, and varying phases of the daily routine in the hospital thus enhancing the heterogeneity of the sample and averting periodicity bias.

3.6. Sample size determination

Calculating the appropriate sample size was done by applying the formula presented by Fisher with a finite population correction (Ojigo, 2019); $\boldsymbol{n' = \frac{NZ^2P(1-P)}{d^2(N-1)+Z^2P(1-P)}}$

n' is the necessary sample size at a finite population, (N) is the total population size (450, the average number of monthly deliveries at JOOTRH). This is 1.96, which is the Z statistic of a 95 percent confidence level. (P) is the desired percentage, which is 50% (50 percent of mothers are ready to practice exclusive breastfeeding, Moraa, 2019). (D) = the accuracy of the approximated values in the research, which is established at ±0.10.

$$\boldsymbol{sample\ size} = \frac{450\times1.96\times1.96\times0.05(1-0.05)}{0.10\times0.10(450-1)+1.96\times1.96\times0.50(1-0.50)}$$ = 79 mothers sampled to participate in the study

3.7. Data Collection.

The five research assistants who helped in collection of data had at least a bachelor's degrees in nutrition. Prior to the study, they received training on the study and data collection procedures. Given that the Baby Friendly Hospital Initiative is a crucial aspect of nutrition, research assistants with a background in nutrition were deemed most suitable for this task. The data collection period spanned three months, from June 1st to September 1st, 2023.

3.7.1. Data Collection Instruments

The researcher used the Baby-friendly Hospital Initiative questionnaire for breastfeeding mothers, which was developed by the World Health Organization and United Nations Children's Fund, to collect quantitative data regarding mothers' knowledge of steps of successful breastfeeding; this was a face-to-face interview. The questionnaire is divided into two parts; the first part collected the demographic characteristics of the mothers, while the second part assessed the knowledge of mothers towards steps of successful breastfeeding. An observation checklist was used to observe correct/incorrect practices of the steps of successful breastfeeding and was ticked appropriately (Marinelli et al., 2019).

3.7.2. Data Collection Procedure

The research participants were identified by the research assistants who ensured their confidentiality, safety, and privacy were assured. The study purpose and ethical issues were read and explained to the research participants who met the inclusion criteria, and those who clearly understood the study purpose were asked to consent. The research assistants then administered the questionnaire by asking questions evaluating their knowledge of steps of

successful breastfeeding; this was a face-to-face interview. This variable (knowledge) was measured using a numerical scale. A mother knowledgeable on a specific step was assigned '1' for 'YES', and those who were not knowledgeable were assigned '0' for 'NO'. The research assistant checked for the practices of steps of successful breastfeeding through observation, after completing the interview. A mother who demonstrated correct practice was assigned '1' for 'YES', and those who could not practically demonstrate the steps were assigned '0' for 'NO'. They were asked if they had questions or concerns and thanked for their time.

3.8. Data Analysis

Data was entered into Statistical Packages for Social Sciences (SPSS) version 29. Data obtained on knowledge and practices of successful breastfeeding steps were analyzed using descriptive statistics, including frequency and percentages (Objective 1 and 2). Percentage scores (frequencies) were awarded based on the number of correct responses recorded for every knowledge item and practice observed. The relationship between the independent variable (mothers' knowledge of steps of successful breastfeeding) and the dependent variable (mothers' practices of steps of successful breastfeeding) while controlling for the confounding variables of age, marital status, and education levels was established using Binary Logistic Regression (Objective 3). The strength and direction of the association were determined by computing the Adjusted Odds Ratio (AOR), interpreted alongside its 95% Confidence Interval (CI). Statistical significance was set at a P-value of less than 0.05 ($P < 0.05$).

Table 3.8:1: *Summary of the Statistical Test Per Objective*

Objective	**Data Analysis**	**Data Presentation**
Objective 1: To evaluate mothers' knowledge of key clinical steps of successful breastfeeding at Jaramogi Oginga Odinga Teaching and Referral Hospital	SPSS Version 29; descriptive statistics; frequencies, % scores	Tables
Objective 2: To determine mothers' practices of the key clinical steps of successful breastfeeding at the Jaramogi Oginga Odinga Teaching and Referral Hospital	SPSS Version 29; descriptive statistics; frequencies, % scores	Tables
Objective 3: To establish the relationship between mothers' knowledge and practices of key clinical steps of successful breastfeeding at the Jaramogi Oginga Odinga Teaching and Referral Hospital	SPSS Version 29; Regression; Binary Logistic Regression.	Tables

3.9. Reliability and Validity

The BFHI questionnaire for breastfeeding mothers was created following extensive consultations and is suitable for use in all maternity settings, whether simple or complex, and has been used in the Kenyan context. It is regarded as both valid and reliable across various

maternity environments (Marinelli et al., 2019). This explains why validity and reliability tests were not done.

3.10. Logistical and ethical considerations

3.10.1. Logistical Considerations

The researcher obtained approval from the Directorate of Postgraduate Studies at Masinde Muliro University of Science and Technology (MMUST), as well as from the MMUST Institutional Ethics and Review Committee and the JOOTRH Ethics and Review Committee. Additionally, a research permit was secured from the National Commission for Science and Technology.

3.10.2. Ethical considerations

The research is ethically accountable; this was done by means of the following measures;

Autonomy

The participants were also well informed about the study and the aim explained to them in a manner that would ensure that they understood. They were given freedom to choose whether to participate and no pressure or coercion was placed on them to make independent decisions. The subjects were also free to drop out whenever they wanted without being subjected to any form of punishment. No other expenses accrued in the course of undertaking the study. Autonomy ensured that the participants felt respected and enabled to make their decisions (Owonikoko, 2023).

Informed Consent

The consent was voluntary, as the participants signed a written consent form or applied a thumbprint to it or a signed consent form following a verbal explanation of the nature and purpose of the study. They could ask questions and seek clarifications and this made them make

better informed decisions about their health. Moreover, the right to refuse participation was strictly guarded: any initial refusal or statement of disapproval was processed without any pressure, and the rationale had not been documented. The participants also had trust towards the interviewer due to this process (Dankar et al., 2019).

Confidentiality and privacy

The participants of the study were numbered so as to conceal their identities at the start of the study. The information forms were not carrying their names and their privacy was safeguarded in respect of the participants (Anane-Sarpong et al., 2019). The interviews were conducted in a secure and conducive and confidential environment and only where they were comfortable.

Beneficence/ non-maleficence

Ethical integrity required clear protocols for participant safety and autonomy. To manage potential distress (due to sensitive questions), the research protocol mandated that data collection would immediately cease if a mother showed discomfort, followed by an immediate referral back to the JOOTRH attending clinical staff for counseling and support, with a guarantee of no impact on their medical care.

CHAPTER FOUR

RESULTS

4.1. Overview

The chapter presents data analysis results of mothers' knowledge and practices of key clinical steps of successful breastfeeding, and the association between the mothers' knowledge and practices of these steps.

4.2. Demographic Factors of the mothers

Mothers who met the inclusion criteria participated in the study; these were 79 mothers, and the response rate was 100%. Table 4:2:1 shows the demographic characteristics of the mothers interviewed. Mothers within the age group 18-24 years accounted for 32.9%, those within the age group 25-34 years accounted for 36.7% 20.3% accounted within the age group 35-44 years, and the minority group was those above 45 years old, accounting for 10.1%. The majority of the mothers were married (75.9%), followed by single mothers (16.5%), separated mothers 5.1% and 2.5% for widowed mothers. The majority had completed tertiary education (43.0%), followed by 40.5%, who completed secondary education level, and the minority (16.5%) had completed primary education.

Table 4.2:1: *Demographic Characteristics of the Mothers*

Variable	Category	Frequency (n)	Percent (%)
Age of Mother (years)	18–24	26	32.9
	25–34	29	36.7
	35–44	16	20.3
	≥45	8	10.1
Marital Status	Married	60	75.9
	Single	13	16.5
	Separated	4	5.1
	Widowed	2	2.5
Education Level	Tertiary	32	40.5
	Secondary	34	43.0
	Primary	13	16.5

4.3. Mother's Knowledge of Steps to Key Clinical Steps of Successful Breastfeeding

According to Table 4.3.1, the majority of the mothers (94.9%) were knowledgeable about step 3 (benefits of breastfeeding), while only 5.1% were not knowledgeable. On step 4 (skin-to-skin contact and early initiation of breastfeeding), 43% of mothers were knowledgeable, while the majority 57% were not knowledgeable. On step 5 (Positioning, Attachment, and Expression of breastmilk), 38% of mothers were knowledgeable, with the majority 62% not knowledgeable. On step 6 (On exclusive breastfeeding), 93.7% were knowledgeable about the need to practice exclusive breastfeeding, and only 6.3% were not knowledgeable. On step 7 (rooming in 24 hours), 94.9% of the mothers were knowledgeable of the need to practice rooming-in, while only 5.1% were not aware. The majority of the mothers (92.4%) were knowledgeable about what to look for when to knew that their baby was hungry and wanted to feed (step 8), but 7.6% were not knowledgeable. The majority of the mothers (81.0%) were knowledgeable about the use and risks of using bottles, teats, and pacifiers in feeding their babies (step 9), while 19.0% were not knowledgeable. For step 10, only 30.4% of mothers reported that they were knowledgeable about seeking support with breastfeeding from a hospital, and 69.6% were not

knowledgeable about where they could access such help. This shows extremely low compliance with step 10.

Table 4.3:1: *Mothers' Knowledge of Key Clinical Steps of Successful Breastfeeding*

Mothers Knowledge	Criteria	Frequency	Percentages
Importance and Management of Breastfeeding	Yes	75	94.9
	No	4	5.1
Skin to Skin Contact, and Early Initiation of Breastfeeding	Yes	34	43
	No	45	57
Positioning, Attachment, and Expression of Breastmilk	Yes	30	38
	No	49	62
No Food or Drink for Newborns Except Breastmilk	Yes	74	93.7
	No	5	6.3
Rooming in 24 Hours a Day	Yes	75	94.9
	No	4	5.1
Recognizing and Responding to Cues	Yes	73	92.4
	No	6	7.6
Use and Risks of Teats, Bottles, and Pacifiers	Yes	64	81
	No	15	19
Post-Discharge Breastfeeding Help	Yes	24	30.4
	No	55	69.6

Note: Yes = knowledge on the step; No = lack of knowledge on the step

4.4. Mother's Practices of the Key Clinical Steps of Successful Breastfeeding

Table 4.4.1 presents the results of mothers' practices of steps of successful breastfeeding. Only 11.4% practiced step 3, while 88.6% could not practice it. On step 4 (skin-to-skin contact and early initiation of breastfeeding), 72.2% of mothers demonstrated correct practice and 27.8% did not. Only 38.0% of mothers could correctly practice step 5 (Positioning, Attachment, and Expression of breastmilk) while the majority (62.0%) could not. The majority of mothers practiced exclusive breastfeeding (step 6) (89.9%) while 10.1% did not practice exclusive breastfeeding. On step 7, the majority practiced rooming in (96.2%) with only 3.8% failing to demonstrate correct practice. The majority of the mothers could correctly practice step 8 (recognize and respond to baby feeding cues) (86.1 %), but 13.9% could not. On step 9, the

majority of women (93.7%) did not use bottles, teats, or pacifiers in feeding their babies, while 6.3% did not. Lastly, only 21.5% demonstrated correct practice on step 10, while the majority (78.5%) could not.

Table 4.4:1: *Mothers' Practices of Key Clinical Steps of Successful Breastfeeding*

Practices Observed	Criteria	Frequency	Percentages
Importance and Management of Breastfeeding	Yes	9	11.4
	No	70	88.6
Skin to Skin Contact, and Early Initiation of Breastfeeding	Yes	57	72.2
	No	22	27.8
Positioning, Attachment, and Expression of Breastmilk	Yes	30	38
	No	49	62
No Food or Drink for Newborn Except Breastmilk	Yes	71	89.9
	No	8	10.1
Rooming in 24 Hours a Day	Yes	76	96.2
	No	3	3.8
Recognizing and Responding to Cues	Yes	68	86.1
	No	11	13.9
Baby not Sucking Pacifier in Maternity	Yes	74	93.7
	No	5	6.3
Post-Discharge Breastfeeding Help	Yes	17	21.5
	No	62	78.5

Note: Yes = Correct practice; No = Incorrect practice

4.5. Relationship Between Mothers' Knowledge and Practices of the Key Clinical Steps of Successful Breastfeeding

The third objective of this study was to establish the relationship between mothers' knowledge and practices of key clinical steps of successful breastfeeding. Binary logistic regression was conducted to determine this relationship while controlling for the potential confounding effects of age, marital status, and education level.

Overall, the results showed no statistically significant relationship between mothers' knowledge and their corresponding breastfeeding practices across all Steps of Successful Breastfeeding ($p > 0.05$). Even though there was some change in the strength and direction of

association, none of them were statistically significant, which showed that increased knowledge did not always lead to better breastfeeding practices.

Looking at the results, Table 4.5.1 indicated that the regression model showed that in Step 3 (Importance and Management of Breastfeeding), the B coefficient was -2.021, which implied that increase in maternal knowledge about the importance of breastfeeding was related to an 87 percent decrease in the likelihood of optimal performance of this step of successful breastfeeding (Exp(B) = 0.132, p = 0.178). Although the relationship was inversely related, it was not found to be statistically significant.

The positive association was found in Step 4 (Skin-to-Skin Contact and Early Initiation), where the association of higher knowledge among mothers was B = 0.505, Exp(B) = 1.657 meaning that mothers who were better informed were 66% likely to practice early initiation and skin-to-skin contact. Nevertheless, the correlation was not significant (p = 0.374).

On Step 5 (Positioning, Attachment, and Expression), the model gave a small B (0.023) and Exp(B) =1.023 indicating less change in practice as knowledge increases. This was not statistically significant (p = 0.963).

The negative coefficient of (B = -0.353) in Step 6 (Exclusive Breastfeeding) showed that a higher level of knowledge was associated with a thirty percent reduction in odds of the right practice (Exp(B) = 0.702, p = 0.650). Similarly, in Step 7 (Rooming-In 24 Hours a Day), more knowledgeable mothers were more likely to room-in (B = 2.359, Exp(B) = 10.582), but this difference was too close to significance (p = 0.092).

In the case of Step 8 (Recognizing and Responding to Infant Cues) the correlation was low (B = 0.052, Exp(B) = 1.053, p = 0.965), meaning that more knowledge did not have a significant effect on maternal responsiveness.

Likewise, in Step 9 (Avoidance of Teats, Bottles, and Pacifiers), the relationship was positive but not significant (B = 0.523, Exp(B) = 1.688, p = 0.674). Finally, Step 10 (Post-Discharge Breastfeeding Support) showed that knowledgeable mothers were 114% more likely to seek or utilize post-discharge breastfeeding help (B = 0.759, Exp(B) = 2.136), but again, the relationship did not reach statistical significance (p = 0.245).

When demographic covariates were examined, education level showed a consistently positive but non-significant influence on good breastfeeding practices across most steps (Exp(B) range: 0.564–3.097). Age was not a strong predictor, with minor variations in directionality across steps. Marital status also demonstrated weak and statistically insignificant relationships throughout. Taken together, these results suggest that although maternal knowledge of breastfeeding steps is essential, knowledge alone does not guarantee appropriate breastfeeding practices.

Table 4.5:1: *Relationship Between Mothers' Knowledge and Practices of Key Clinical Steps of Successful Breastfeeding*

Knowledge Step / Covariate	B	P-value	Odds Ratio (Exp(B))	95% CI for OR
Knowledge of the Importance and Management of Breastfeeding	-2.021	0.178	0.132	0.010 – 1.740
Age	0.183	0.667	1.201	0.520 – 2.770
Marital Status	18.554	0.997	1.108	0.000 – 2.450
Education	-0.534	0.297	0.586	0.210 – 1.650
Knowledge of Skin-to-Skin Contact & Early Initiation	0.505	0.374	1.657	0.540 – 5.080
Age	0.173	0.548	1.189	0.670 – 2.120
Marital Status	-0.042	0.884	0.959	0.550 – 1.670
Education	0.434	0.240	1.544	0.740 – 3.210
Knowledge of Positioning, Attachment & Expression	0.023	0.963	1.023	0.380 – 2.760
Age	-0.253	0.334	0.777	0.460 – 1.310
Marital Status	0.182	0.492	1.200	0.690 – 2.090
Education	-0.094	0.783	0.910	0.470 – 1.750
Knowledge of Not Giving Food/Drink Except Breastmilk	-0.353	0.650	0.702	0.160 – 3.070
Age	-0.223	0.389	0.800	0.480 – 1.330
Marital Status	0.169	0.528	1.184	0.710 – 1.960
Education	-0.076	0.825	0.927	0.480 – 1.800
Knowledge of Rooming-In 24 Hours a Day	2.359	0.092	10.582	0.780 – 143.600
Age	-0.460	0.499	0.631	0.170 – 2.370
Marital Status	-0.085	0.926	0.918	0.100 – 8.420

Knowledge Step / Covariate	B	P-value	Odds Ratio (Exp(B))	95% CI for OR
Education	1.130	0.265	3.097	0.440 – 21.600
Knowledge of Recognizing & Responding to Infant Feeding Cues	0.052	0.965	1.053	0.120 – 9.130
Age	-0.163	0.669	0.850	0.410 – 1.770
Marital Status	0.235	0.449	1.265	0.690 – 2.300
Education	-0.572	0.294	0.564	0.190 – 1.650
Knowledge of Use and Risks of Teats, Bottles & Pacifiers	0.523	0.674	1.688	0.140 – 20.000
Age	0.190	0.729	1.209	0.410 – 3.520
Marital Status	-0.483	0.485	0.617	0.160 – 2.410
Education	-1.692	0.116	0.184	0.020 – 1.570
Knowledge of Post-Discharge Breastfeeding Help	0.759	0.245	2.136	0.600 – 7.550
Age	-0.452	0.160	0.637	0.340 – 1.210
Marital Status	-0.264	0.350	0.768	0.440 – 1.330
Education	0.899	0.069	2.458	0.940 – 6.450

CHAPTER FIVE

DISCUSSION

5.1. Overview

This chapter discusses the results of the study as they relate to the literature regarding the mothers' knowledge and practices of steps of successful breastfeeding and the association between mothers' knowledge and practices of steps of successful breastfeeding.

5.2. Mothers' Knowledge of Key Clinical Steps of Successful Breastfeeding Steps

This section discusses the findings related to Objective 1, which sought to determine the level of mothers' knowledge concerning the key clinical Steps of Successful Breastfeeding. The general findings showed a great dichotomy, with mothers showing a high level of knowledge on the majority of steps of the Baby-Friendly Hospital Initiative (BFHI), but they lacked critical aspects of the matters of complex and skill-based clinical practices and post-discharge supportive measures. This disproportion is a manifestation of a larger trend in national and international literature, where the institutional adherence to the BFHI guidelines is biased towards policy compliance and concept education rather than practical and skill-based maternal education (Ojigo, 2019; von Seehausen et al., 2023).

5.2.1. High Mothers' Knowledge of Key Clinical Steps of Successful breastfeeding 3, 6, 7, 8, 9

The results of the research point to the overall high level of maternal knowledge on multiple steps of the main clinical Steps of Successful Breastfeeding, which surpasses the required level of compliance with the BFHI criteria of 70 -80 percent (WHO, 2023, 2024). This is an indication that institutional delivery of the message on teaching breastfeeding at Jaramogi Oginga Odinga Teaching and Referrals hospital (JOOTRH) is an effective approach in terms

of teaching the core philosophy of promoting breastfeeding as stipulated by the WHO/UNICEF BFHI model, and achievement in this major clinical procedure (WHO, 2023).

More than 90 percent of mothers had information of the Importance and Management of Breastfeeding (Step 3), and an equally high percentage of mothers had information of No Food or Drink Other Than Breastmilk (Step 6) and Rooming-in 24 Hours a Day (Step 7). These results are aligned with those of von Seehausen et al. (2023), who found that 79% of mothers at Baby-Friendly hospitals possessed the knowledge of exclusive breastfeeding, which highlights the effectiveness of institutional-based policy-based education. The strong level of knowledge in Steps 3 and 6 is also a pointer to the good implementation of health worker training where the messaging on the avoidance of supplementation and the need to encourage exclusive breastfeeding is institutionalized.

Such observation could be viewed as a sign of high-level vertical knowledge transfer, the information flows between the hospital personnel and the mothers are effective in terms of their conceptual aspects of breastfeeding. Nonetheless, this transfer is still mostly didactic in a sense that it is the what that is to be done but not the how. The high level of knowledge about Rooming-in (Step 7) that enables constant contact between the mother and the baby infant is good institutional compliance to this important clinical step but does not always ensure the appropriate practice of breastfeeding. This fact agrees with the postulation that was made by Kavle et al. (2019) who cautions that compliance to the policy in the absence of practical training gives an illusion of success, but it also conceals the underlying competency gaps in mothers.

Most of the mothers showed high awareness of Recognizing and Responding to Baby Feeding Cues (Step 8) and Avoiding Feeding Bottles, Teats, and Pacifiers (Step 9) with both of them

surpassing the WHO benchmark of 80% (WHO, 2023). Ojigo (2019) also discovered that 85.4 percent of mothers were able to perfectly recognize infant cues and 99 percent knew about the dangers of using pacifiers. This high awareness means that the dissemination of BFHI related information (the importance of responsive feeding and artificial nipple risk) are well spread. The results correspond to those of Oueidat et al. (2020), who postulated that pacifier avoidance is a factor of successful suckling and less nipple confusion, which directly supports the further practice of exclusive breastfeeding.

However, even though such strong results are there, qualitative interpretation shows that the knowledge is usually shallow in such areas. McNally et al. (2020), Mothukuri et al. (2021) noted that mothers can detect general cues, such as crying or fussing, but cannot comprehend less noticeable pre-feeding behaviors, such as lip-smacking. This indicates that education is still more theoretical than it is practical in the sense that it does not go to a level of practical work, which should transform the awareness to a competent action. This means that the seeming achievement in these steps is surface learning, mothers recall major messages but not necessarily to practice them.

In terms of conceptual framework, the high performance in these conceptual and policy-driven steps empowers the independent variable (knowledge) but in a limited aspect. The model assumes that knowledge predicts practice although this relationship relies on the quality and the type of knowledge passed along. The results therefore reveal a structural vulnerability that institutional policies impress awareness but the knowledge taught is not deepened procedurally in the ability of sustainable and confident breastfeeding behaviour.

5.2.2. Critical Deficits in Mothers' Knowledge in Steps 4, 5, 10

Contrastingly, as far as the high competency in the domain of conceptual knowledge, the research has shown a high level of deficiency in the knowledge of essential knowledge and post-discharge support systems among mothers. This observation solidifies the lack of relation between institutional endeavors and maternal learning. The weak points include Steps 4, 5, and 10.

Familiarity with Skin-to-Skin Contact and Early Initiation of Breastfeeding was only 43% of this, which is considerably lower than the compliance rate of 75 than that of the world. This lack of knowledge is comparable to Agbozo et al. (2020) who reported low awareness of early initiation (31%). Nevertheless, these findings are very different to Maastrup et al. (2021) who observed a higher compliance rate in high-income nations highlighting inequality in health system infrastructure, staff training, and maternal education between low resource and high resource environments. The lack of knowledge in Step 4 is specifically worrisome considering the already proven correlation between early initiation and neonatal survival. The works of Woldeamanuel (2020) and Liberty et al. (2019) all show comparable results that starting breastfeeding during the first hour of a child's life leads to more milk, maternal-infant bonding, and decreased infant morbidity. Thus, the poor knowledge level among JOOTRH mothers does not only indicate the educational disparity but also predicts the poor early initiation practice and possibly worse infant health status such as high child mortality and morbidly in the Nyanza region (Kimani-Murage et al., 2021).

System wise, this observation indicates that even though JOOTRH follows BFHI principles particularly in most of the crucial clinical steps, its application in the immediate postpartum phase may be patchy. Patient turnover, workload, and the problem of insufficient staff might decrease the chances of providing personalized teaching on the issue of an early start. It means

that compliance at an institutional level (as represented by policy presence) does not necessarily correspond to patient-level competence, and that quality assurance indicators need to assess the quality of content delivery and maternal understanding.

What is more worrying is that, only 38 percent of mothers proved to be knowledgeable enough about Positioning, Attachment and Expression of Breastmilk. This rate is considerably lower compared to the recommended 80 percent of the WHO (WHO, 2024). In their study, Connolly et al. (2019) discovered that 96% of mothers at the baby-friendly hospitals were familiar with such aspects and credited their effectiveness to the unified hands-on practice taught by lactation consultants. The poor score at the JOOTRH thus indicates weaknesses in real training and absence of visual or participatory instructional methods.

Step 5 is always cited in the literature as the clinical basis of a successful breastfeeding (Akinola et al., 2022; Connolly et al., 2019). Poor positioning and fixation are the major contributors of nipple pain, broken nipples, and perceived milk insufficiency, which are major factors leading to early breastfeeding termination. The observation that not more than half of the mothers had an understanding of appropriate attachment implies that health education is largely lecture-based, which does not include mothers via demonstration or demonstration-return.

The important point to note here is that the knowledge at Step 5 is predictive as well as foundational to breastfeeding success. The most knowledgeable mothers with regard to conceptual information on breastfeeding (e.g., exclusivity and rooming-in), who do not have mastery of positioning and attachment, may not be able to maintain the practice. Thus, the high results of conceptual steps of JOOTRH can be compensated by this lack of clinical knowledge.

Post-Discharge Breastfeeding Support had the lowest score of knowledge (30.4%), and it shows that there is a dire institutional gap in continuity of care. The WHO (2024) requires that the mothers must be informed on where to go in case of need after discharge and the expected response rate should be at least 80 percent. The current results are way below this threshold, which means that either postnatal follow-up systems are not well practiced or they are poorly conveyed.

Kavle et al. (2019) and Gianni et al. (2019) emphasize that the literature on the role of structured postnatal support systems, including telephone hotlines, peer-support groups, or community nurse visits, in breastfeeding continuation outside of a hospital setting is very limited. Ojigo (2019) called this the gap the Isolation Barrier and explained that on leaving the hospital, mothers were often alone to deal with breastfeeding issues. Similar findings were noted by Chen et al. (2020) who showed that out of mothers who had no structured post-discharge support, there was a twofold increase in the risk of premature breastfeeding discontinuation. The results of the present study can thus confirm this literature and raise awareness on the necessity of the incorporation of community linkage programs to close the institutional-community divide.

These results in the framework of the conceptual framework indicate a partial but incomplete operationalization of the independent variable (maternal knowledge). Although there is a good conceptual knowledge (Steps 3, 6, 7, 8, 9), there is a lack of procedural knowledge (Steps 4, 5, 10), which is directly involved in mediating behavior. Considering that knowledge is the main predictor of practice, these gaps are pointers to the fact that the dependent variable (practice) is jeopardized. These findings therefore indicate a knowledge-practice disjunction, which is

thoroughly reported in breastfeeding studies in which awareness cannot be applied to behavior without reinforced experience and ongoing support (Agbozo et al., 2020; Kavle et al., 2019).

Comprehensively, this part has come to the conclusion that even though JOOTRH shows institutional adherence to BFHI conceptual regulations, it does not translate them into viable, sustainable maternal competencies on critical steps.

5.3. Mothers' Practices of Key Clinical Steps of Successful Breastfeeding Steps

This part shows the practices observed by the mothers in the major clinical Steps of Successful Breastfeeding and explains them in the conceptual, structural, and cultural contexts of influencing the breastfeeding behavior within Jaramogi Oginga Odinga Teaching and Referral Hospital (JOOTRH). All in all, the findings indicate a two-fold trend of high compliance in the institutionally controlled steps and a critical failure in practical, skill-based and post-discharge steps, which prove the moderating effect of institutional setting and maternal autonomy on breastfeeding outcomes.

5.3.1. Better Practice in Key Clinical Steps 6, 7, 9

The research identified three main steps of the Baby-Friendly Hospital Initiative (BFHI): No Food or Drink Except Breastmilk (Step 6, 89.9%), Rooming-in 24 Hours a Day (Step 7, 96.2%), and Avoidance of Pacifiers and Feeding Bottles (Step 9, 93.7%) as the ones with almost universal adherence, which are mostly institutionally controlled. These are above the 80% institutional compliance standard of WHO (WHO, 2024), which means that BFHI policy standards are well-complied with in JOOTRH by supervising the staff and systematizing ward routine.

The same tendency is the same as the results of Ojigo (2019), who found 96.1% and 92.2% rates of exclusive breastfeeding and rooming-in compliance in Kenyan facilities, respectively, accredited by BFHI, and are consistent with the findings of von Seehausen et al. (2023), who found 79 percent exclusive breastfeeding adherence in a sample of African hospitals. Similarly, Oueidat et al. (2020) highlighted that the prevention of bottles and pacifiers will preserve the natural suckling reflex of the infant and, therefore, confirm that these behaviors are clinically protective.

Systems wise, these high compliance rates highlight the institutional scaffolding impact, whereby organizational regulations, staff supervision, and immediate post-delivery assistance promotes compliance to the recommended practices. The success however is more of passive following and not the internalized competence. It is possible to ensure repeated exposure to breastfeeding as Lok et al. (2020) have found, yet in the absence of targeted maternal education, rooming-in facilitates development of dependency on hospital practices instead of long-term independence. Thus, these results, though positive, compliance during monitoring does not ensure sustainability under institutional pressure even after the withdrawal of institutional support.

5.3.2. Critical Practice Failure in Key Clinical Steps 3 and 5

Conversely, hands-on, skill-related steps portrayed appallingly low outcomes in the study. Mothers practiced Importance and Management of Breastfeeding (Step 3) only at 11.4 percent correctly and Positioning, Attachment, and Expression (Step 5) was practiced at 38.0 percent. They both are way below the WHO benchmark of 80% (WHO, 2023).

The Step 5 result is similar to the one provided by Ojigo (2019), who stated that none of her participants displayed appropriate attachment and positioning methods. This chronic

performance has shown gaps in the transfer of skills in maternal health education in Kenya. The low practice rate is practically identical to the low level of knowledge (38% on Objective 1), which supports the fact that the conceptual framework of knowledge-practice relationship is valid indeed: the deficiency of procedural knowledge directly affects behavioral competence. On the contrary, Connolly et al. (2019) have discovered that the proficiency of Step 5 in fully BFHI-compliant hospitals is 96 percent, which means that the difference at JOOTRH is due to the lack of practical mentorship and demonstration.

The most serious knowledge-practice gap was demonstrated on step 3; more than 90 percent of mothers were aware of breastfeeding principles conceptually, but only 11.4 percent of them had the ability to implement breastfeeding principles correctly in practice. This difference reveals the theory-practice gap inherent in facility based maternal teaching wherein theoretical instruction takes place of practical learning. According to Oueidat et al. (2020), ineffective practical coaching triggers a clinical skill cascade, causing nipple trauma, a feeling of inadequate milk provision, and an ultimate decision to end the breastfeeding process prematurely.

The mastery of these steps is low culturally, as the practice of reliance on traditional postnatal caregivers (nyamrerwa) and peers as opposed to professional lactation care is long-lasting and intergenerational among the Western Kenyan populace. Such untrained caregivers can continue with the wrong positioning or feeding habits because they do not have standardized knowledge (Kavle et al., 2019). The limited possibility of mothers developing tactile competency is hindered by structural problems like overcrowded maternity beds and shortage of staff to make use of one-on-one demonstrations. The outcome is a training bottleneck in the system; mothers know what but not how.

5.3.3. Transitional Steps Bridging Institutional and Maternal Autonomy (Steps 4, 8, 10)

The transitional phases, which create the connection between the hospital and home setting, resulted in mixed results. Skin-to-Skin Contact and Early Breastfeeding Initiation (Step 4), 72.2% of the mothers had immediate initiation of breastfeeding, a slight lower rate than the 80% of WHO. This is a tremendous improvement over the 4.9 percent reported by Ojigo (2019) and indicates that it has been well implemented by the staff when making deliveries. Although the knowledge score was low (43%), the practice rate was high with the compensatory staff intervention and nurses introducing breastfeeding on behalf of the mother as reported by Maastrup et al. (2021). Nonetheless, Woldeamanuel (2020) cautions that compliance facilitated by the staff can conceal maternal dependency instead of empowerment resulting in inconsistent continuation of the same after discharge.

In Recognizing and Responding to Cues (Step 8) 86.1% of mothers were noted to have engaged in responsive feeding, which seemed to conform to WHO standards. But the qualitative evidence shows that this could be a reactive feeding; feeding upon cries of baby and not anticipatory responsiveness. According to McNally et al. (2020) and Mothukuri et al. (2021), to be truly responsive, one needs training in perception and interpretation, which may be missing in formal curricula. Therefore, the performance may seem to be high, but the behavior can not be profound or reflective.

In case of Post-Discharge Help-Seeking (Step 10), it was found that 21.5% of the mothers only sought breastfeeding help after discharge, which is low knowledge (30.4) and poor community structures to support help. The outcome is consistent with Gianni et al. (2019), who concluded that lack of postnatal follow-up is a factor in early breastfeeding discontinuation, and Kavle et al. (2019), who identified a lack of cohesion between hospital and community care in Kenya.

This disparity is an indicator of structural continuity failure; BFHI triumph within hospitals fails as soon as mothers and children return to unprescribed surroundings devoid of peer counsellors or adoption systems. The overall transitional outcomes demonstrate how threatened is the transition between the institutional control and maternal autonomy in which temporary compliance fails to become long lasting self-efficacy.

5.4.Relationship Between the Mothers' Knowledge and Practice of Key Clinical Steps of Successful Breastfeeding

The binary logistic regression was applied to establish the correlation between the mother knowledge and their practices of the Key Clinical Steps of Successful Breastfeeding as well as the age, education level, and marital status as the possible confounding factors. The B coefficients, odds ratios (Exp(B)) and the significance levels (p-values) and 95% confidence intervals are given in the results (Table 4.5.1). In general, it was possible to note that there was no statistically significant relationship between knowledge and practice at all steps ($p > 0.05$), but directional differences were presented in the magnitude and direction of relationship among the steps.

Step 3 is to educate all the pregnant women on the advantages and management of breastfeeding. The values of B coefficient -2.021 and Exp(B) -0.132 show that there is an inverse correlation between knowledge and practice, with higher knowledge of the benefits of breastfeeding being related to lower odds of practicing this step by about 87 percent. This conclusion is not statistically relevant ($p = 0.178$), but it can indicate systemic or environmental limitations and not maternal attitudes. The same was mentioned by Jama et al. (2020), who stated that even knowledgeable mothers might lack the ability to transfer the knowledge about breastfeeding because of the conflicting cultural or healthcare recommendations. This

highlights the fact that the dissemination of knowledge in the absence of coordinated clinical assistance might not play an important role in improving practical compliance.

In step 4, assist mothers to breastfeed within a one-hour post-partum, this step showed a positive non-significant relationship (B = 0.505, Exp(B) = 1.656, p = 0.374). This indicates that educated mothers had a 66 percent higher probability of early initiation, which is also in line with the results of Boccolini et al. (2023) and Rollins et al. (2021), who have stated that early initiation can be enhanced through specific counseling and facility-driven support. But, in this case, the insignificance means that awareness can be obstructed by the barriers, like a lack of postnatal care, or insufficient staff, which can lead to the delay in the early initiation as in the study by Odeny et al. (2020), where institutional factors were more important than maternal awareness of the importance of breastfeeding.

The B coefficient of 0.023 and Exp(B) of 1.023 in step 5 (show mothers how to breastfeed and maintain lactation) shows that there is no significant influence of knowledge to practice (p = 0.963). The low level of correlation shows a possible skill deficiency: mothers might know the idea of effective attachment or expression, yet they are deprived of any real-life example of it. It is reported that experiencing same results Kimani-Murage et al. (2021) found that the deficiency of hands-on assistance by health workers undermines the transfer of knowledge to effective lactation care. The non-significance, hence, implies the need to organize clinical mentorship in the postnatal wards as opposed to knowledge dissemination.

In step 6, practice exclusive breastfeeding (EBF) six months, B coefficient of -0.353 (Exp(B) = 0.703, p = 0.650) means that mothers who knew more about EBF had the probability of EBF about 30% lower to do it. The outcome is however not statistically significant. This is consistent with the results of Ochola et al. (2018), which indicated a significant decrease in EBF despite

the high level of awareness, which was explained by the overwhelming workload of the mother, a social stigma, and the lack of support at work. The discrepancy between knowledge and behavior in this step confirms that the force of socio-economic and structural obstacles upholds knowledge influence overriding Rollins et al. (2021), who assert that policy and environment are more predictive on EBF than individual awareness.

In step 7, rooming in, B coefficient = 2.359 (Exp (B) = 10.582, p = 0.092) shows a strong positive correlation between knowledge and practice; mothers with knowledge on rooming-in had approximately ten times higher probability to practice rooming-in. Though not statistically important, the size of the effect shows one of the strongest associations out of all the steps. This trend is echoed by the results of Jama et al. (2020), who also associated rooming-in behavior with the enforcement of the BFHI policies on a facility level. Thus, Step 7 can demonstrate a success area that is supported by the policy, in which institutional frameworks permit mothers to put their knowledge into action.

In step 8, promote on-demand breastfeeding, the B coefficient of 0.052 (Exp(B) = 1.053, p = 0.965) shows that there is no significant difference in the practice in response to knowledge increase. This implies that on-demand feeding patterns may be superseded by the cultural practices or provider interference in case such mothers are aware of the infant feeding cues. Research carried out by Boccolini et al. (2023) also reported that this behavior is crucial to social support and family understanding. The insignificance of this step points at the weakness of any knowledge-based action, unless interpersonal and household interactions are to be considered.

In Step 9, it is important to avoid artificial teats, bottles, and pacifiers. The B coefficient of 0.523 (Exp(B) = 1.688, p = 0.674) is positive but insignificant, implying that knowledgeable

mothers had a 68% higher chance of avoiding artificial teats, however, without statistical significance. This is consistent with the research conducted by Kimani-Murage et al. (2021), who also stated that bottle-feeding continues because of the practice of hospitals, family recommendations, and convenience. These findings are supported by the current research, and they suggest that the knowledge should be supported by consistency in the institutions and modeling of behavior by medical personnel.

Finally, the B coefficient (B = 0.759, Exp (B) = 2.136, p = 0.245) in step 10 shows that knowledgeable mothers were about twice as likely to seek or accept post-discharge breastfeeding support but this correlation was not significant. This observation is consistent with what was found by Odeny et al. (2020) who determined that the continuation of support post discharge is an essential measure to maintain breastfeeding practices. The positive association in this case implies that mothers are well aware of the need of continued support, only to be constrained by structural limitations, including absence of follow-up mechanisms, to keep continuity.

The general finding of the regression is that knowledge in itself cannot predict optimum breastfeeding practices, which is in tandem with both the international and national literature. The research by Kimani-Murage et al. (2021), Ochola et al. (2018), and Boccolini et al. (2023) all confirm the existence of behavioral, cultural, and systemic enablers that mediate the conversion of knowledge into practice. The non-significant results among steps indicate that the correlation between knowledge and practice is being moderated by the variables in contexts, education level, social support, workplace policies, and facility compliance with the standards of BFHI.

Notably, the interpretation of these results is subject to several limitations, primarily related to the study design. Firstly, the use of a cross-sectional design means the data only captures a single point in time, specifically the period just prior to maternal discharge. This design is unable to establish a causal relationship or explore the longitudinal sustainability of breastfeeding practices after mothers leave the institutional environment, particularly regarding the breakdown of Step 10 (Post-Discharge Support). Secondly, while the exclusion criteria were rigorous, the study relied on self-reported knowledge combined with direct observation of practice, which may be susceptible to the Hawthorne effect, where mothers, aware of being observed by a researcher, may temporarily improve their performance of key steps. Lastly, the findings are site-specific to JOOTRH; while this strongly supported the institutional focus of the research gap, it limits the generalizability of the specific knowledge-practice failure rates to other BFHI-designated facilities across the Nyanza region or Kenya

CHAPTER SIX

CONCLUSIONS AND RECOMMENDATIONS

6.1.Conclusion

6.2. Mothers' Knowledge of the Key Critical Steps of Successful Breastfeeding

The study concludes that the Baby-Friendly Hospital Initiative (BFHI) at JOOTRH achieves only partial success in knowledge transfer. While mothers receive and retain the conceptual philosophy of optimal feeding (high knowledge of Steps 3, 6, 7,8, 9), the study still shows severe deficits in knowledge regarding Skin-to-Skin Contact (Step 4)**,** the cornerstone skill of Positioning, Attachment, and Expression (Step 5)**,** and most critically, Post-Discharge Support (Step 10)**.** This demonstrates that mothers are poorly unprepared to handle independent breastfeeding management once she has left the facility. Importantly, the lack of these steps prompts a strategic change in the methods of providing the lectures to the target audience as generic lectures should be replaced by interactive and focused training that involves the use of visual aids and repeated demonstrations as the means of narrowing the knowledge gaps in the most complex and critical skills of achieving the successful breastfeeding that could be maintained.

6.3. Mothers' Practice of the Key Critical Steps of Successful Breastfeeding

This paper concludes that mothers practice in JOOTRH shows a twofold trend, where high and passive compliance with institutionally mandated procedures (Steps 6, 7, 9) confirms the achievement of BFHI policy standards, but the general failure of skills related behavior is devastating to such success. The critical low performance in Importance and Management (Step 3) and Positioning, Attachment, and Expression (Step 5) reveal a massive gap in the transfer of clinical skills, which indicates that the temporary compliance with the staff does not provide the maternal competency in the long term. Also, the low Post-Discharge Help-Seeking

(Step 10, 21.5%) indicates a failure of the system continuity, meaning that the successes with breastfeeding activities fail after the mother is discharged of the hospital premises. Thus, to change the short-term acquiescence into the long-term self-efficacy, the institution should lay structural support systems emphasizing the active skill transference as soon as possible. The types of supports that are needed are mandatory, one-on-one bedside clinical mentorship at all steps that are skill intensive, the establishment of special lactation support centers inside the facility, and the provision of an established and working referral pathway, to community-based support groups, or Community Health Volunteer (CHV) networks that provide follow-up care.

6.4.Association between Knowledge and Practice Key Critical Steps of Successful Breastfeeding

The binary logistic regression analysis has determined that maternal knowledge was not significant predictor of breastfeeding practice in all of the key clinical Steps of successful breastfeeding ($P > 0.05$), even after accounting of sociodemographic factors such as age, education, and marital status. This is the main conclusion of the research which shows that the conventional linear Knowledge, Practice theoretical model is not sufficient in the rigorous, high intervention setting of JOOTRH. The non-significance of all the steps suggests that the non-practice is not a cognitive, but a systemic deficiency because the institutional and training weakness overwhelm the personal intellectual abilities of the mother. To reinforce this knowledge-practice pathway functionally, the institution needs to change their orientation towards the delivery of information to structural and practical support. This includes built-in clinical mentorship to transfer knowledge to proven competence in high-skill steps (such as Positioning and Attachment) and development of strong postnatal follow-up systems to follow up to reinforce and maintain practices beyond the discharge (Step 10). This is the only way to

transform the prior knowledge of the mother into long-term behavioral compliance, which is reliable.

6.5. Recommendation

The research comes up with particular, precise suggestions that would support the growth of motherly knowledge and practice of major clinical steps of BFHI, enhance the execution of the framework in JOOTRH and other comparable health institutions, and prioritize actionable, policy-related modifications to increase impact.

6.5.1. Practice Recommendations.

The nursing staff has to shift its theoretical approach of counseling to structured, skills-based illustrations that have to secure obligatory transferred skills under supervision as the capacity of breastfeeding mothers is developed around the essential clinical practices of effective breastfeeding. This training should have an observational feedback and correction to ensure that the mother is competent before discharge. Additionally, the counseling should be effectively incorporated with the practical teaching through the entire steps. This would be necessary in order to make sure that the philosophical intent of the mother can be directly translated into clinical competence thus decreasing the vast knowledge to practice gap that is witnessed.

6.5.2. Recommendations for Policy and Institutional Action

The Kisumu County Department of Health ought to institute an elaborate policy that encourages the empowerment of BFHI in all county hospitals. Most importantly, this policy should incorporate into the current structure of the Community Health Volunteer (CHV) program the Post-Discharge Breastfeeding Support (Step 10) formally. Such integration will entail a system, which makes referral a mandatory explicit requirement at discharge, and

connects every mother with a known CHV or community support resource to be followed up within the first week. Also, the hospital management needs to develop a policy of a compulsory competency audit of all personnel working in the maternity and post-natal departments. Those audits in particular should determine the capacity of the staff to offer effective and practical support in ensuring the fidelity and quality of BFHI implementation within the facility. In addition, the JOOTRH requires quality measures on the important management processes like the implementation of written infant feeding policy, adherence to Comply fully with the International Code of Marketing of Breast-milk Substitutes, staff training, continuous monitoring and data-management systems.

6.5.3. Recommendations for Further Research

There are two areas that ought to be focused on in future research. To begin with, it must embrace a mixed-method approach to undertake a detailed exploration of how successful transfer of the skills can be hindered. This must contain an element of qualification, as it may be the interviews with mothers and staff members in order to get the contextual and cultural explanations of what stands behind the knowledge-practice gap observed. Secondly, longitudinal follow-up study is to be undertaken to monitor the discharged mothers in the first six months of JOOTRH. The purpose of this study should be to record the prevalence of early cessation of breastfeeding and barriers to cessation, that is, to necessarily correlate the cessation with the failure of the mother that was recorded in her hospital stay to achieve competence in effective breastfeeding.

REFERENCES

Abdulla, F., Hossain, M. M., Karimuzzaman, M., Ali, M., & Rahman, A. (2022). Likelihood of infectious diseases due to lack of exclusive breastfeeding among infants in Bangladesh. *PLOS ONE*, *17*(2), e0263890. https://doi.org/10.1371/journal.pone.0263890

Agbozo, F., Ocansey, D., Atitto, P., & Jahn, A. (2019). Compliance of a Baby-Friendly Designated hospital in Ghana with the WHO/UNICEF Baby and Mother-Friendly care practices. *Journal of Human Lactation*, *36*(1), 175–186. https://doi.org/10.1177/0890334419848728

Akinola, A., Karama, R. S., & Rajput, M. (2022). Awareness of natural breastfeeding milk among mothers and the importance of colostrum within the first hour of birth in India. *International Journal of Community Medicine and Public Health*, *9*(7), 2992. https://doi.org/10.18203/2394-6040.ijcmph20221772

Anane-Sarpong, E., Wangmo, T., & Tanner, M. (2019). Ethical principles for promoting health research data sharing with sub-Saharan Africa. *Developing World Bioethics*, *20*(2), 86–95. https://doi.org/10.1111/dewb.12233

Azzeh, F. S., Alazzeh, A. Y., Hijazi, H. H., Wazzan, H. Y., Jawharji, M. T., Jazar, A. S., Filimban, A. M., Alshamrani, A. S., Labani, M. S., Hasanain, T. A., & Obeidat, A. A. (2018). Factors Associated with Not Breastfeeding and Delaying the Early Initiation of Breastfeeding in Mecca Region, Saudi Arabia. *Children (Basel)*, *5*(1), 8. https://doi.org/10.3390/children5010008

Bartick, M., Stehel, E. K., Calhoun, S. L., Feldman-Winter, L., Zimmerman, D., Noble, L., Rosen-Carole, C., & Kair, L. R. (2021). Academy of Breastfeeding Medicine Position Statement and Guideline: Infant Feeding and Lactation-Related Language and

Gender. *Breastfeeding Medicine*, *16*(8), 587–590. https://doi.org/10.1089/bfm.2021.29188.abm

Beggs, B., Koshy, L., & Neiterman, E. (2021). Women's Perceptions and Experiences of Breastfeeding: a scoping review of the literature. *BMC Public Health*, *21*(1). https://doi.org/10.1186/s12889-021-12216-3

Boccolini, C. S., De Aquino Lacerda, E. M., Bertoni, N., Oliveira, N., Alves-Santos, N. H., Farias, D. R., Crispim, S. P., Carneiro, L. B. V., Schincaglia, R. M., Giugliani, E. R. J., De Castro, I. R. R., & Kac, G. (2023). Trends of breastfeeding indicators in Brazil from 1996 to 2019 and the gaps to achieve the WHO/UNICEF 2030 targets. *BMJ Global Health*, *8*(9), e012529. https://doi.org/10.1136/bmjgh-2023-012529

Castro, M. J. (2021). Beneficios de la lactancia para madres y niños. *Gaceta Médica De Caracas*, *129*(s3). https://doi.org/10.47307/gmc.2021.129.s3.8

Chen, C., Chen, R., Chen, M., Chen, L., & Wei, H. (2019). Challenges and outcomes of using the Ten Steps to Successful Breastfeeding in the Mother–Baby Friendly Institute Program in Taiwan. *Journal of Human Lactation*, *36*(1), 187–191. https://doi.org/10.1177/0890334419839366

Connolly, E., Reinkowsky, M., Giglia, R., Sexton, B., Lyons-Wall, P., Lo, J., & O'Sullivan, T. A. (2019). Education on antenatal colostrum expression and the Baby Friendly Health Initiative in an Australian hospital: An audit of birth and breastfeeding outcomes. *Breastfeeding Review*, *27*(1), 21. https://ro.ecu.edu.au/ecuworkspost2013/6610/

Couto, G., Dias, V. M., & De Jesus Oliveira, I. (2020). Benefits of exclusive breastfeeding: An integrative review. *Nursing Practice Today*. https://doi.org/10.18502/npt.v7i4.4034

Da Silva Santos, A. P., Lamy, Z. C., Koser, M. E., De Paula Gomes, C. M. R., Costa, B. M., & Gonçalves, L. L. M. (2022). Skin-To-Skin Contact and Breastfeeding At Childbirth: Women's Desires, Expectations, And Experiences. *Revista Paulista De Pediatria*, *40*. https://doi.org/10.1590/1984-0462/2022/40/2020140

Dankar, F. K., Gergely, M., & Dankar, S. (2019). Informed consent in biomedical research. *Computational and Structural Biotechnology Journal*, *17*, 463–474. https://doi.org/10.1016/j.csbj.2019.03.010

Dukuzumuremyi, J. P. C., Acheampong, K., Abesig, J., & Luo, J. (2020). Knowledge, attitude, and practice of exclusive breastfeeding among mothers in East Africa: a systematic review. *International Breastfeeding Journal*, *15*(1). https://doi.org/10.1186/s13006-020-00313-9

Gianni, N., Bettinelli, N., Manfra, N., Sorrentino, N., Bezze, N., Plevani, N., Cavallaro, N., Raffaeli, N., Crippa, N., Colombo, N., Morniroli, N., Liotto, N., Roggero, N., Villamor, N., Marchisio, N., & Mosca, N. (2019). Breastfeeding difficulties and risk for early breastfeeding cessation. *Nutrients*, *11*(10), 2266. https://doi.org/10.3390/nu11102266

Gupta, S., Pajai, S., & Pawade, A. A. (2023). Benefits of Breastfeeding on Child and Postpartum Psychological Health of the Mother. In *Journal of SAFOG* (Vol. 15, Issue 2). https://doi.org/10.5005/jp-journals-10006-2217

Habibi, M., Laamırı, F. Z., Ashayeri, H., Doukkali, L., Mrabet, M., & Barkat, A. (2018). The impact of maternal socio-demographic characteristics on breastfeeding knowledge and practices: An experience from Casablanca, Morocco. *International Journal of Pediatrics and Adolescent Medicine*, *5*(2), 39–48. https://doi.org/10.1016/j.ijpam.2018.01.003

Heidkamp, R. A., Piwoz, E., Gillespie, S., Keats, E. C., D'Alimonte, M. R., Menon, P., Das, J. K., Flory, A., Clift, J. W., Ruel, M. T., Vosti, S., Akuoku, J. K., & Bhutta, Z. A. (2021). Mobilising evidence, data, and resources to achieve global maternal and child undernutrition targets and the Sustainable Development Goals: an agenda for action. *The Lancet*, *397*(10282), 1400–1418. https://doi.org/10.1016/s0140-6736(21)00568-7

Issaka, A. I., Agho, K., & Renzaho, A. M. N. (2017). Prevalence of key breastfeeding indicators in 29 sub-Saharan African countries: a meta-analysis of demographic and health surveys (2010–2015). *BMJ Open*, *7*(10), e014145. https://doi.org/10.1136/bmjopen-2016-014145

Jama, A., Gebreyesus, H., Woldearegay, T. W., Gebregyorgis, T., Teweldemedhin, M., Berhe, T., & Berhe, N. (2020). Exclusive breastfeeding for the first six months of life and its associated factors among children aged 6-24 months in Burao district, Somaliland. *International Breastfeeding Journal*, *15*(1). https://doi.org/10.1186/s13006-020-0252-7

Jebena, D. D., & Tenagashaw, M. W. (2022). Breastfeeding practice and factors associated with exclusive breastfeeding among mothers in Horro District, Ethiopia: A community-based cross-sectional study. *PLOS ONE*, *17*(4), e0267269. https://doi.org/10.1371/journal.pone.0267269

Kavle, J. A., Ahoya, B., Kiige, L., Mwando, R., Olwenyi, F., Straubinger, S., & Gathi, C. M. (n.d.). *Baby-Friendly Community Initiative—From national guidelines to implementation: A multisectoral platform for improving infant and young child feeding practices and integrated health services*. Maternal and Child Nutrition. https://doi.org/10.1111/mcn.12747

Kimani-Murage, E., Kimiywe, J., Mutoro, A., Wilunda, C., Wekesah, F., Muriuki, P., Mwangi, B. M., Samburu, B., Madise, N., McGarvey, S. T., & Griffiths, P. (2021). Effectiveness of the baby-friendly community initiative on exclusive breastfeeding in Kenya. *Maternal and Child Nutrition*, *17*(3). https://doi.org/10.1111/mcn.13142

Kim, K. M., & Choi, J. (2020). Associations between breastfeeding and cognitive function in children from early childhood to school age: a prospective birth cohort study. *International Breastfeeding Journal*, *15*(1). https://doi.org/10.1186/s13006-020-00326-4

KNBS (2022). Kenya Demographic and Health Survey 2022: Volume 1. Nairobi, Kenya, and Rockville, Maryland, USA: KNBS and ICF

Laksono, A. D., Wulandari, R. D., Ibad, M., & Kusrini, I. (2021). The effects of mothers' education on achieving exclusive breastfeeding in Indonesia. *BMC Public Health*, *21*(1). https://doi.org/10.1186/s12889-020-10018-7

Lestari, P. P. (2020). Review: Implementasi Baby Friendly Hospital Initiative (Inisiasi Rumah Sakit Sayang Ibu) Dan Keberhasilan Menyusui Eksklusif. *Jurnal Ilmiah Umum Dan Kesehatan Aisyiyah*, *5*(1).

Liao, X., Nguyen, T. P. L., & Sasaki, N. (2022). Use of the knowledge, attitude, and practice (KAP) model to examine sustainable agriculture in Thailand. *Regional Sustainability*, *3*(1), 41–52. https://doi.org/10.1016/j.regsus.2022.03.005

Liberty, A., Wouk, K., Chetwynd, E., & Ringel–Kulka, T. (2018). A geospatial analysis of the impact of the Baby-Friendly Hospital Initiative on breastfeeding initiation in North Carolina. *Journal of Human Lactation*. https://doi.org/10.1177/0890334418776645

Lisna, A., Arifin, R. Y. A., & Anjasmara, R. A. (2019). Early Breastfeeding Initiation in Indonesia. *Journal of Ultimate Public Health*, *3*(1). https://doi.org/10.22236/jump-health.v3.i1.p163-168

Lok, K. Y. W., Chow, C. L. Y., Fan, H. S. L., Chan, V. J., & Tarrant, M. (2020). Exposure to baby-friendly hospital practices and mothers' achievement of their planned duration of breastfeeding. *BMC Pregnancy and Childbirth*, *20*(1). https://doi.org/10.1186/s12884-020-02904-0

Lokeesan, L., Martin, E., & Miller, Y. (2022). Scoping Review of Baby-Friendly Hospital Initiative compliance and breastfeeding initiation in Sri Lanka. *JOGN Nursing*, *51*(2), 153–165. https://doi.org/10.1016/j.jogn.2021.12.005

Lyellu, H. Y., Hussein, T. H., Wandel, M., Stray-Pedersen, B., Mgongo, M., & Msuya, S. E. (2020). Prevalence and factors associated with early initiation of breastfeeding among women in Moshi municipal, northern Tanzania. *BMC Pregnancy and Childbirth*, *20*(1). https://doi.org/10.1186/s12884-020-02966-0

Maastrup, R., & Haiek, L. N. (2021). Compliance with the "Baby-friendly Hospital Initiative for Neonatal Wards" in 36 countries. *Maternal and Child Nutrition*, *15*(2). https://doi.org/10.1111/mcn.12690

Mäkelä, H., Axelin, A., Kolari, T., & Niela-Vilén, H. (2023). Exclusive breastfeeding, breastfeeding problems, and maternal breastfeeding attitudes before and after the baby-friendly hospital initiative: A quasi-experimental study. *Sexual & Reproductive Healthcare*, *35*, 100806. https://doi.org/10.1016/j.srhc.2022.100806

Marinelli, A., Del Prete, V., Finale, E., Guala, A., Pelullo, C. P., & Attena, F. (2019). Breastfeeding with and without the WHO/UNICEF baby-friendly hospital initiative. *Medicine*, *98*(44), e17737. https://doi.org/10.1097/md.0000000000017737

Masaba, B. B., Mmusi-Phetoe, R. M., & Mokula, L. L. D. (2021). Factors affecting WHO breastfeeding recommendations in Kenya. *International Journal of Africa Nursing Sciences*, *15*, 100314. https://doi.org/10.1016/j.ijans.2021.100314

Mazhar, S. A., Anjum, R., Anwar, A. I., & Khan, A. A. (2021, June 14). *Methods of data collection: a fundamental tool of research*. http://medicaljournalshouse.com/index.php/ADR-CommunityHealth/article/view/631

McNally, J., Hugh-Jones, S., & Hetherington, M. M. (2020). "An invisible map" - maternal perceptions of hunger, satiation and 'enough' in the context of baby-led and traditional complementary feeding practices. *Appetite*, *148*, 104608. https://doi.org/10.1016/j.appet.2020.104608

Mothukuri, R., Kumar, S., & Sowndarya, R. (2021). A study to Assess the Knowledge and Practice of Staff Nurses and Postnatal Mothers on Implementation of Baby Friendly Hospital Initiative in a Tertiary Care Hospital in Chennai. *Journal of Pharmaceutical Research International*, 61–68. https://doi.org/10.9734/jpri/2021/v33i1531288

Moraa, D. (2019). Predictors of Exclusive Breast-Feeding Among Women in Formal Employment Attending Child Welfare Clinic at Jaramogi Oginga Odinga Teaching and Referral Hospital. *Semantic Scholar*.

Mohamud, A. M., Nzioki, J. M., & Muhamud, C. (2021). Prevalence of Optimal Breastfeeding and Maternal and Child Health Care Service-Related Factors Associated with Optimal Breastfeeding in Dollow District, Somalia. *African Journal of Health Sciences*, *34*(2).

Nantel, A., & Gingras, V. (2023). Are Complementary Feeding Practices Aligned with Current Recommendations? A Narrative Review. *Children (Basel)*, *10*(5), 794. https://doi.org/10.3390/children10050794

Ochola, Z. (2019). Determinants of Early Childhood Mortality in Nyanza Region, Kenya. *http://erepository.uonbi.ac.ke/*.

Ogbo, F. A., Okoro, A., Olusanya, B. O., Olusanya, J. O., Ifegwu, I. K., Awosemo, A. O., Ogeleka, P., & Page, A. (2019). Diarrhea deaths and disability-adjusted life years attributable to suboptimal breastfeeding practices in Nigeria: findings from the global burden of disease study 2016. *International Breastfeeding Journal*, *14*(1). https://doi.org/10.1186/s13006-019-0198-9

Ojigo, J. (2019.). An Assessment of Adherence to the Ten Steps of the Baby Friendly Hospital Initiative at Kenyatta National Hospital, Maternity Unit. *University of Nairobi*.

Oueidat, H., Charafeddine, L., Nimer, H., Hussein, H., & Nabulsi, M. (2020). Knowledge and attitudes of Lebanese women towards Baby Friendly Hospital Initiative practices. *PLOS ONE*, *15*(9), e0238730. https://doi.org/10.1371/journal.pone.0238730

Odingo, P. A., Munde, E. O., Sang, D., Atieli, H., & Ouma, C. (2023). Maternal factors influencing under-five mortality in Karemo Sub-county in Siaya County, Kenya. *Research Square (Research Square)*. https://doi.org/10.21203/rs.3.rs-2575922/v1

Opon, S. (2021, September 1). *Effects of Health system approach intervention on adherence to appointments in antenatal and postnatal clinics in public hospitals in selected counties in Kenya*. http://41.89.31.5:8080/handle/123456789/1269

Owonikoko, T. K. (2013). Upholding the principles of autonomy, beneficence, and justice in Phase I clinical trials. *Oncologist*, *18*(3), 242–244. https://doi.org/10.1634/theoncologist.2013-0014

Öztürk, M. N. Y., Boran, P., Ersu, R., & Peker, Y. (2021). Possums-based parental education for infant sleep: cued care resulting in sustained breastfeeding. *European Journal of Pediatrics*, *180*(6), 1769–1776. https://doi.org/10.1007/s00431-021-03942-2

Pattison, K. L., Kraschnewski, J. L., Lehman, E., Savage, J. S., Downs, D. S., Leonard, K. S., Adams, E. L., Paul, I. M., & Kjerulff, K. H. (2019). Breastfeeding initiation and duration and child health outcomes in the first baby study. *Preventive Medicine*, *118*, 1–6. https://doi.org/10.1016/j.ypmed.2018.09.020

Prentice, A. M. (2022). Breastfeeding in the modern world. *Annals of Nutrition and Metabolism*, *78*(Suppl. 2), 29–38. https://doi.org/10.1159/000524354

Pretorius, C. E., Asare, H., Kruger, H. S., Genuneit, J., Siziba, L. P., & Ricci, C. (2021). Exclusive Breastfeeding, child mortality, and economic cost in Sub-Saharan Africa. *Pediatrics*, *147*(3). https://doi.org/10.1542/peds.2020-030643

Rollins, L., Giddings, T., Henes, S., Culbreth, W., Coleman, A. S., Smith, S., White, C., & Nelson, T. (2022). Design and implementation of a nutrition and breastfeeding education program for Black expecting mothers and fathers. *Journal of Nutrition Education and Behavior*, *54*(8), 794–803. https://doi.org/10.1016/j.jneb.2022.03.011

Sawe, C. J., Kogi-Makau, W., Ettyang, G. a. K., & Co, K. (2021). Tripartite of Malnutrition: co-existence of underweight, overweight and micronutrient deficiency among children in Kisumu County, Kenya. *Research Square (Research Square)*. https://doi.org/10.21203/rs.3.rs-209539/v1

Scime, N. V., Metcalfe, A., Nettel-Aguirre, A., Tough, S., & Chaput, K. H. (2023). Association of postpartum medication practices with early breastfeeding cessation among mothers with chronic conditions: A prospective cohort study. *Acta Obstetricia Et Gynecologica Scandinavica*, *102*(4), 420–429. https://doi.org/10.1111/aogs.14516

Song, J. T., Kinshella, M. W., Kawaza, K., & Goldfarb, D. M. (2023). Neonatal Intensive Care Unit Interventions to Improve Breastfeeding rates at discharge among preterm and low birth weight infants: A Systematic Review and Meta-Analysis. *Breastfeeding Medicine*, *18*(2), 97–106. https://doi.org/10.1089/bfm.2022.0151

Starnes, J. R., Rogers, A., Wamae, J., Okoth, V., Mudhune, S. A., Omondi, A., Were, V., Awino, D. B., Lefebvre, C. H., Yap, S., Odhong, T. O., Vill, B., Were, L., & Wamai, R. (2023). Childhood mortality and associated factors in Migori County, Kenya: evidence from a cross-sectional survey. *BMJ Open*, *13*(8), e074056. https://doi.org/10.1136/bmjopen-2023-074056

Tuthill, E. L., Miller, J. D., Collins, S. M., Widen, E. M., Onono, M., & Young, S. L. (2020). HIV infection, hunger, breastfeeding self-efficacy, and depressive symptoms are associated with exclusive breastfeeding to six months among women in western Kenya: a longitudinal observational study. *International Breastfeeding Journal*, *15*(1). https://doi.org/10.1186/s13006-019-0251-8

UNICEF. (2023). *Baby-Friendly Hospital Initiative Ten steps to successful breastfeeding, from UNICEF and the World Health Organization*. Retrieved October 25, 2023, from https://www.unicef.org/documents/baby-friendly-hospital-initiative

Vilar-Compte, M., Hernández-Cordero, S., Ancira-Moreno, M., Burrola-Méndez, S., Ferré-Eguiluz, I., Omaña, I., & Navarro, C. (2021). Breastfeeding at the workplace: a systematic review of interventions to improve workplace environments to facilitate breastfeeding among working women. *International Journal for Equity in Health*, *20*(1). https://doi.org/10.1186/s12939-021-01432-3

Von Seehausen, M. P., De Oliveira, M. I. C., Leal, M. D. C., Domingues, R. M. S. M., & Boccolini, C. S. (2023). Baby-Friendly Hospital Initiative and exclusive breastfeeding

during hospital stay. *Revista De Saude Publica*, *57*(1), 28. https://doi.org/10.11606/s1518-8787.2023057004283

Wang, Y., Arvizu, M., Rich-Edwards, J. W., Manson, J. E., Wang, L., Missmer, S. A., & Chavarro, J. E. (2022). Breastfeeding duration and subsequent risk of mortality among US women: A prospective cohort study. *EClinicalMedicine*, *54*, 101693. https://doi.org/10.1016/j.eclinm.2022.101693

Waruiru, W., Oramisi, V., Sila, A., Onyango, D., Waruru, A., Mwangome, M., Young, P. W., Muuo, S., Nyagah, L. M., Ollongo, J., Ngugi, C., & Rutherford, G. W. (2022). All-cause and cause-specific mortality rates for Kisumu County: a comparison with Kenya, low-and middle-income countries. *BMC Public Health*, *22*(1). https://doi.org/10.1186/s12889-022-14141-5

Woldeamanuel, B. T. (2020). Trends and factors associated to early initiation of breastfeeding, exclusive breastfeeding and duration of breastfeeding in Ethiopia: evidence from the Ethiopia Demographic and Health Survey 2016. *International Breastfeeding Journal*, *15*(1). https://doi.org/10.1186/s13006-019-0248-3

World Health Organization. (2024). *Child mortality and causes of death*. https://www.who.int/data/gho/data/themes/topics/topic-details/GHO/child-mortality-and-causes-of-death

World Health Organization. (2024, season-04). *3 in 5 babies not breastfed in the first hour of life*. Retrieved October 25, 2023, from https://www.who.int/news/item/31-07-2018-3-in-5-babies-not-breastfed-in-the-first-hour-of-life#:~:text=An%20estimated%2078%20million%20babies%20%E2%80%93%20or%20three,babies%20are%20born%20in%20low-%20and%20middle-income%20countries.

World Health Organization. (2022). *Regional webinar: Breastfeeding in the African context – country experiences in scaling up breastfeeding*. Retrieved October 25, 2023, from https://www.who.int/news-room/events/detail/2022/11/09/default-calendar/regional-webinar-breastfeeding-in-the-african-context-country-experiences-in-scaling-up-breastfeeding#:~:text=Despite%20of%20the%20huge%20benefits%20of%20breastfeeding%2C%20according,rates%20below%20the%2050%25%20WHA%20target%20for%202025.

World Health Organization. (2023a). *Breastfeeding*. Retrieved October 24, 2023, from https://www.who.int/health-topics/breastfeeding#tab=tab_1

World Health Organization. (2023b). *Infant mortality*. Retrieved October 24, 2023, from https://www.who.int/data/gho/data/themes/topics/indicator-groups/indicator-group-details/GHO/infant-mortality

Wu, H., Lu, D., & Tsay, P. (2022). Rooming-In and breastfeeding duration in First-Time mothers in a modern postpartum care center. *International Journal of Environmental Research and Public Health*, *19*(18), 11790. https://doi.org/10.3390/ijerph191811790

Zivich, P. N., Lapika, B., Behets, F., & Yotebieng, M. (2018). Implementation of steps 1–9 to successful breastfeeding reduces the frequency of mild and severe episodes of diarrhea and respiratory tract infection among 0–6 month infants in the Democratic Republic of Congo. *Maternal and Child Health Journal*, *22*(5), 762–771. https://doi.org/10.1007/s10995-018-2446-9

APPENDICES

Appendix I: Consent Form for the Mothers

Study Number _____

The title of the study is as follows: - Mothers Knowledge and Practices of Key Clinical Steps of Successful Breastfeeding at Jaramogi Odinga Teaching and referral hospital Kenya.

Principal Investigator: Wycliffe Otieno Agutu (post graduate student -Public Health Nutrition, Masinde Muliro University of Science and Technology)

Supervisors: - Dr. Jane Situma (Ph.D.).

- Dr. Lucy Mutuli (Ph.D.)

Introduction: -

The Ten Steps of Successful Breastfeeding are the results of the collaboration between the World Health Organization (WHO) and the United Nations International Childrens Fund (UNICEF) as a part of the Baby-Friendly Hospital Initiative (BFHI). The project will be supporting, promoting, and maintaining breastfeeding in certified baby-friendly hospitals. With these efforts, child mortality has still been an issue of concern. The under-five mortality rate in Kenya stands at 37.2 deaths per 1000 live births with Nyanza recording the highest rate in the country (82 deaths per 1000 live births). The ignorance and unfavorable breastfeeding habits are the causes of about 96% of infant deaths in the developing world. Effective breastfeeding will avert approximately 45 percent of the morbidity and mortality due to breastfeeding. To fill this gap, a research was carried out at Jaramogi Oginga Odinga

Teaching and referral hospital (JOOTRH) to determine the knowledge and practices of mothers in regard to the steps of successful breastfeeding. Study procedures are:

1. Questionnaire to you on the different aspects of the steps in the Baby Friendly Hospital Initiative (Successful breastfeeding).

2. Practices of some of the steps of the Baby Friendly Hospital Initiative (successful breastfeeding) to be observed.

Advantages: The research will reveal a huge disparity between the knowledge of the mothers and their actual practice of effective breastfeeding. With these findings in place, we can be able to influence the policies and strategies to improve the practice of breastfeeding.

Risks: There are no risks of the participation in this study to you or your child. It involves no invasive procedures which can cause any harm to either of you.

Voluntarism: You are free to take part in the survey. Participation in this is not financially incentivized, and you can drop out at any point without repercussions.

Confidentiality: The information that will be gathered about you and your baby will be kept confidential. None of your personal information will reach anybody without your written consent. Although we will share the general results, we will not show your identity or the identity of your baby in such discussions.

If you need to address any ethical concerns related to the study, please contact the JOOTRH Ethics Committee via email at ercjootrh@gmail.com or by telephone at 057-2020801. For further clarifications or questions about the study, feel free to reach out to the investigator.

Wycliffe Otieno Agutu on Phone number *0716439719*

I, _____having received adequate information regarding the study research, hereby agree and give consent for me to be included in this study as explained to me

I understand the purpose of the study and the conditions of participation.

Participant ‘s Signature/ thumbprint_____Date:_____

Phone number _____

I, _____declare that I have adequately explained to the above participant the study procedure and given her time to ask questions and seek clarification regarding the study. I have answered all questions raised to the best of my ability.

Investigator ‘s Signature_____ Date_____

Appendix II: Observation Checklist for Successful Breastfeeding

Steps of Successful Breastfeeding	Yes	No
Does the mother hold their baby skin-to-skin immediately after birth or as soon as possible and allowed to remain with them for at least 1 hour?		
Does the mother get supported or encouraged to initiate BF as soon as possible after birth, within the first hour after delivery?		
Do mothers maintain exclusively BF or breast milk feeding at the maternity?		
Can the mother express breast- milk using a clean and dry glass or food-grade hard plastic container with a secure lid for milk collection and storage?		
Do mothers and infants remain together in the same room 24 hours a day unless separation is medically indicated?		
Can the mother respond adequately to their child's feeding cues?		
Is the mother using cups, pacifiers, teats, or feeding bottles?		
Can mothers correctly position/attach mothers correctly during breastfeeding?		

Appendix III: Questionnaire for Breastfeeding Mothers

Title: Mothers' Knowledge and Practices of Successful Breastfeeding at Jaramogi Oginga Odinga Teaching and Referral Hospital, Kenya

Date: _____ Hospital:_____Study Number:_____

Questionnaire to devaluate mothers' knowledge of successful breastfeeding

Date questionnaire completed: _____ Study Number: _____ Age of mother: _____ Age _____ Marital Status _____ Education; _____	
How many antenatal visits did you make to this health facility for care before you gavebirth?_____Visits None ☐ (*if none, go to question 4.)*	
What type of delivery did you have:Normal (vaginal) ☐ Cesarean section without general anesthesia ☐ Caesarean section with general anesthesia ☐ Other: (describe): _____	[Gen.2]
How are you feeding your baby? Breastfeeding exclusively ☐ Both breastfeeding and feeding breast-milk substitutes ☐ Feeding my baby breast-milk substitutes (not breastfeeding at all) ☐ Other: (please describe): _____	[Gen.3]

Note: If breastfeeding or breastfeeding breast milk substitutes,please continue with this questionnaire. If you are not breastfeeding at all, please don't.	
How were you informed to hold your baby first time? Immediately ☐ Within five minutes ☐ Within half an hour, ☐ Within an hour ☐ as soon as I was able to respond (after C-section with general anesthesia) ☐ Other: ☐ hour (how long after birth?)____ Can't remember ☐ Have not held yet *[If you haven't held your baby yet, go to Q13.]*	[4.1]

6	How did you hold your baby this first time? (Complement by observing the specific practice) Skin-to-skin ☐ Wrapped without much skin contact ☐	[4.2]
7.	During this first time your baby was with you, did anyone on the staff encourage you to look for signs your baby was ready to feed and offer you help with breastfeeding? Yes ☐ No ☐	[4.5]
8	Did the staff offer you any help with breastfeeding since that first time? Yes ☐ No *[If yes:]* How long after birth was this help offered? ☐ Within 6 hours of when your ☐ ☐	[5.1]

	baby was born More than 6 hours after the birth of your baby	
9	Did the staff help you position and attach your baby for breastfeeding before discharge? (Mother to demonstrate how to position the baby) Yes ☐ No ☐ The staff offered help, but I didn't need it. ☐	[5.2]
15.	6. Did the staff show you or give you information on how to express your milk byhand? (Mother to demonstrate) 7. ☐ Yes ☐ No 8. Have you tried expressing your milk yourself? Yes ☐ No ☐ If yes, were you able to express your milk? Yes, ☐ Partly ☐ No	[5.3] [5.4] ☐
16.	Where was your baby while you were in the maternity services after giving birth? My baby was always with me both day and night. ☐ There were times when my baby was not with me. ☐ If your baby was away at all, please describe where why, and for how long:	[7.1]

	_____ _____ *[Note: If your baby was cared for away from you during all or part of the night,please mention that in your description above.]*	
17.	What advice have you been given about how often to feed your baby? No advice given ☐ Every time my baby seems hungry (as often as they want)☐ Every hour ☐ Every 1-2 hours ☐ Every 2-3 hours ☐ Other (please tell us): _____	[8.1]
18.	What advice have you been given about how long your baby should suckle? No advice given ☐ For a limited time. If so, for how long? _____ For as long as my baby wants to ☐ Other (please tell us): _____	[8.2]
19.	Has your baby been given anything other than breast milk since birth? Yes ☐ No ☐ Don't know [if "No" or "Don't know", go to Question 22]	[6.1]

	If yes, what was given? [tick all that apply] Infant formula Water or sugar water ☐ Other fluids (please tell us what): _____ Don't know ☐	
20.	If yes, why was your baby given the supplement(s)? [tick all that apply] I requested it. ☐ My doctor or other staff recommended the supplements but didn't say why. ☐ My doctor or other staff recommended the supplements because (please say why): Other (please tell us why): ☐ Don't know ☐ No supplements were given	[6.1]
21.	If supplement(s) were given, were they fed by: Bottle with teat or nipple? ☐ Cup? ☐ Spoon? ☐ ☐ ☐ Other: I don't know.	[9.1]

22.	Has your baby sucked on a pacifier (dummy or soother), as far as you know, while you've been in the maternity unit? Yes ☐ No ☐ Don't know ☐	[9.2]
23.	Have you been given any leaflets or supplies that promote breast milk substitutes? ☐ ☐ Yes No What, if any, of the following have you received: Leaflet from a formula company promoting formula feeding or related supplies? A gift or samples to take home, including formula, bottles, or other related supplies? ☐ Other (please tell us what):	[Code. 2] ☐
24.	Have you been given any suggestions by the staff about how or where to get help if you have problems feeding your baby after you return home? Yes ☐ No ☐	[10.1]
25.	[If "Yes":] What suggestions have you been given? [tick all that apply] 5. Get help from the hospital ☐ Get help from a health professional ☐ 6. Call a helpline ☐ 7. Get help from a mother support group or a ☐ ☐ peer/lay counselor 8. Get help from another community service ☐	[10.2]

	Other (please tell us what):	

Thank you so much for answering all these questions!

If you want to know anything after filling in this form, you can talk to one of the healthcare staff members about it before you go home. By answering this questionnaire, you contribute to improving our maternity services.

Enquiries

For any inquiries or clarification, please contact: - Wycliffe Otieno Agutu – Principal Investigator, at -0716439719.

Email: agutuwycliffe2@gmail.com

In case you want redress concerning ethical issues in the study of the general research activity, contact – JOOTRH Ethics Committee Email; ercjootrh@gmail.com, Telephone; 057-2020801

Appendix IV: WHO/UNICEF global criteria for the eight critical areas towards successful breastfeeding

Every facility providing maternity services and care for newborn infants should:

STEP	GLOBAL CRITERIA

Inform all pregnant women about the benefits and management ofbreastfeeding.	Among women who attend at least two antenatal visits: **At least 70%** reported that a staff member either had an individual conversation with them or provided a group talk that covered breastfeeding information. **At least 70%** could articulate reasons for the importance of two out of the following practices: skin-to-skin contact, proper positioning and attachment during breastfeeding, and exclusive breastfeeding for the first six months. These practices play a crucial role in maternal and fetal health, emphasizing the significance of effective antenatal care
Help mothers initiate breastfeeding within half an hour of birth.	In **at least 75%** of vaginal deliveries, babies are placed and held skin-to-skin with their mothers within 5 minutes after birth. **At least 80%** of mothers receiving special care report having the opportunity to hold their babies skin-to-skin. **At least 50%** of mothers who had cesarean deliveries with general anesthesia state that their babies were placed in skin-to-skin contact within an hour of being responsive and alert.

Show mothers how to breastfeed and maintain lactation even if they are separated from their infants.	-Among the selected clinical staff members, **at least 80%** report that they provide instruction to mothers on positioning and attaching their babies for breastfeeding. Among the selected mothers (including cesarean deliveries): **At least 80%** report receiving assistance with breastfeeding. **At least 80%** can describe and demonstrate how they were taught to express breast milk by hand. **At least 80%** have been informed that they need to breastfeed or express milk six times or more every 24 hours to maintain milk supply.

Give newborn infants no food or drink other than breast milk unless medically indicated.	**75%** of newborns delivered are exclusively breastfed or exclusively fed expressed breast milk from birth until discharge. **At least 80%** of mothers report that their babies received only breast milk during this period. This practice is essential for promoting infant health and nutrition.
Practice rooming-in - that is, allow mothers and infants to remain together - 24 hours a day.	**At least 80%** of mothers and babies in the postpartum wards are observed to be together. **At least 80%** of mothers report that they have remained in the same room with their babies without any separation for the past 24 hours.
Encourage breastfeeding on demand.	Among the selected mothers: **At least 80%** report receiving guidance on recognizing hunger cues in their babies. **At least 80%** can describe at least two cues that indicate when their baby is hungry.

Give no artificial teats or pacifiers (also calleddummies or soothers) to breastfeeding infants.	In postpartum wards, at least 80% of babies are not using bottles, teats, or pacifiers. At least 80% of mothers report that their infants have not been fed using bottles with artificial teats or nipples.
Establish breastfeeding support groupsand refer mothers to them on discharge from the hospitalor clinic.	Among the selected mothers: **At least 80%** report receiving information about where to seek help upon discharge from the hospital. This guidance is crucial for ensuring a smooth transition and continued support for both mothers and their infants.

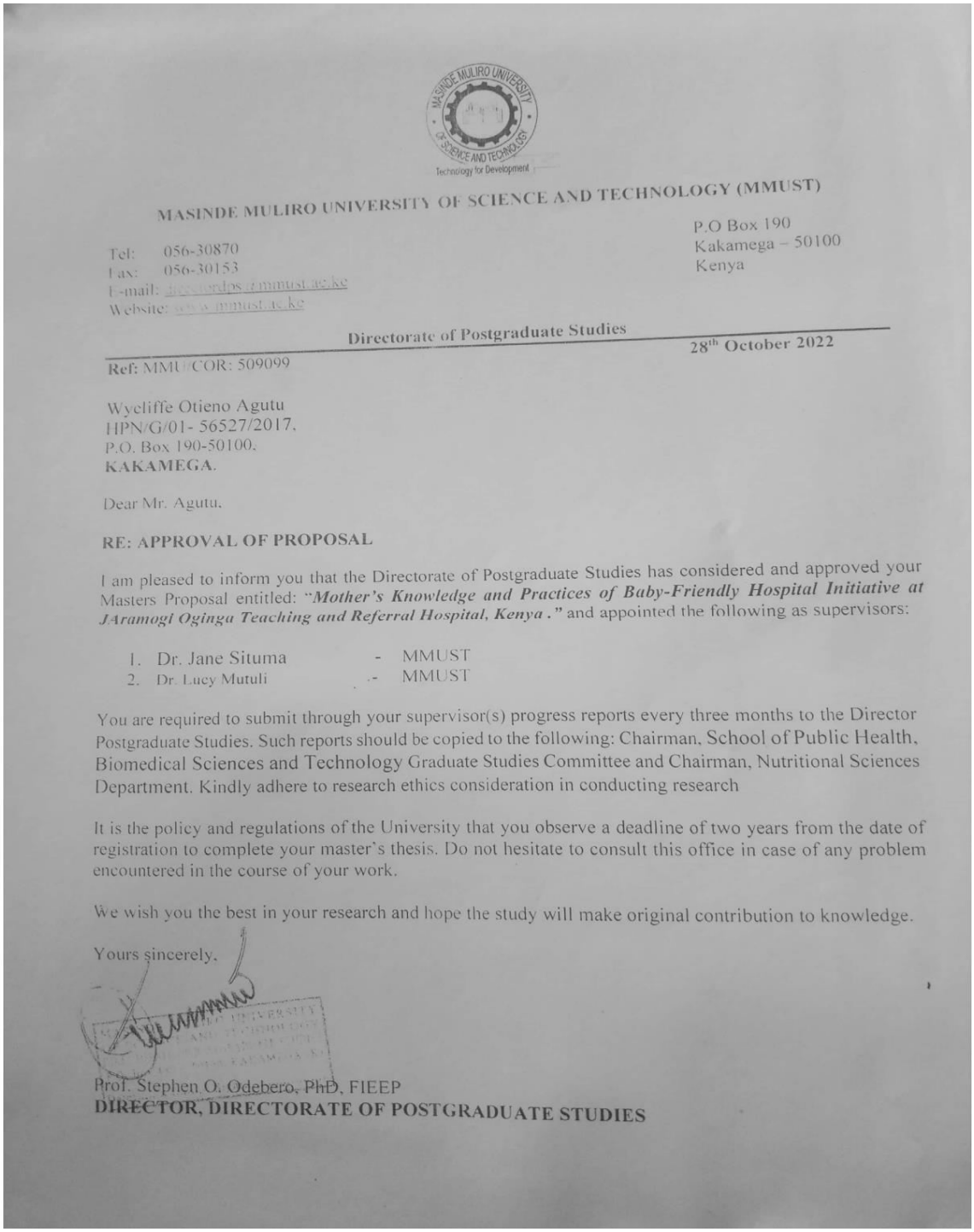
Appendix V: Budget

Category	Remarks	Units	Unit Cost (KShs)	Total (KShs)
Proposal Development	Printing drafts	1	1,000	1,000
	Proposal Copies	15	1,000	15,000
Data Collection	tationery (Pens, Paper, and Study Definitions)			2000
	Training research assistants	24 hours	1,000/day	3, 000
	Research assistants	3	10,000	30000
Analysis of data	Data analysis expert	1	35,000	35,000
Dissemination of findings	Presentation	1	3,000	3,000
Thesis Write Up	Computer Services			5,000
	Printing drafts	1	2,000	2,000
	Printing Thesis	5	2,000	10,000
Miscellaneous				30,000
Total				**136,000**

Appendix VI: Time frame

Activity	**September November 2022**	**November February 2022**	**March, 2023 May, 2023**	**June 2023 August 2023**	**August 2024**
Concept paper Development and Presentation					
Proposal writing and presentation					
Submission for ethical approval by JOOTRH/MMUST ERC					
Pretesting, Data Collection, and Analysis					
Dissemination of findings					
Thesis Writing and Submission					

Appendix VII: Directorate of Postgraduate Studies Approval



MASINDE MULIRO UNIVERSITY OF SCIENCE AND TECHNOLOGY (MMUST)

P.O Box 190
Kakamega – 50100
Kenya

Tel: 056-30870
Fax: 056-30153
E-mail: directordps@mmust.ac.ke
Website: www.mmust.ac.ke

Directorate of Postgraduate Studies

Ref: MMU/COR: 509099

28th October 2022

Wycliffe Otieno Agutu
HPN/G/01- 56527/2017,
P.O. Box 190-50100,
KAKAMEGA.

Dear Mr. Agutu,

RE: APPROVAL OF PROPOSAL

I am pleased to inform you that the Directorate of Postgraduate Studies has considered and approved your Masters Proposal entitled: "***Mother's Knowledge and Practices of Baby-Friendly Hospital Initiative at JAramogi Oginga Teaching and Referral Hospital, Kenya .***" and appointed the following as supervisors:

1. Dr. Jane Situma - MMUST
2. Dr. Lucy Mutuli - MMUST

You are required to submit through your supervisor(s) progress reports every three months to the Director Postgraduate Studies. Such reports should be copied to the following: Chairman, School of Public Health, Biomedical Sciences and Technology Graduate Studies Committee and Chairman, Nutritional Sciences Department. Kindly adhere to research ethics consideration in conducting research

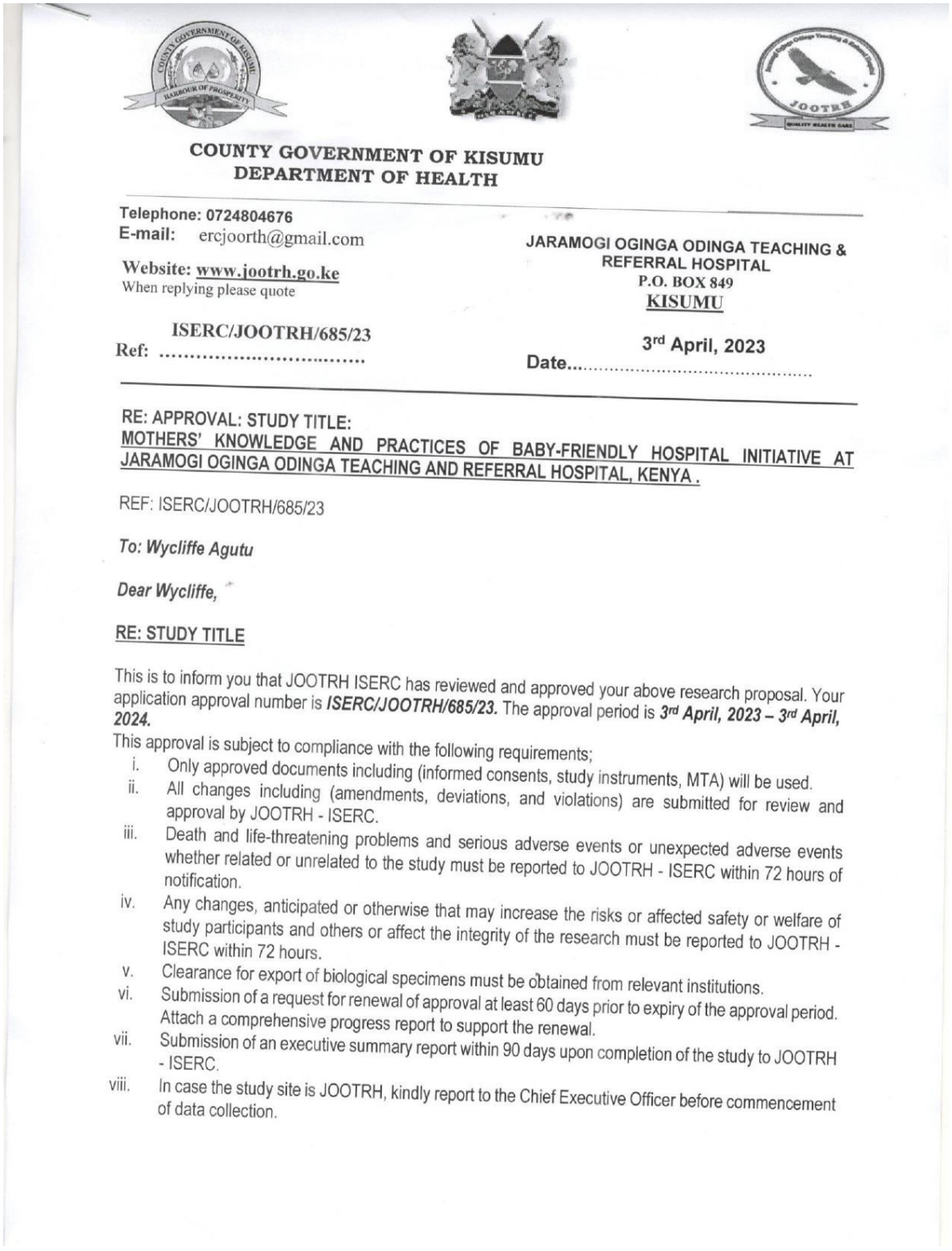
It is the policy and regulations of the University that you observe a deadline of two years from the date of registration to complete your master's thesis. Do not hesitate to consult this office in case of any problem encountered in the course of your work.

We wish you the best in your research and hope the study will make original contribution to knowledge.

Yours sincerely,

Prof. Stephen O. Odebero, PhD, FIEEP
DIRECTOR, DIRECTORATE OF POSTGRADUATE STUDIES

Appendix VIII: County Government of Kisumu Research Authorization



COUNTY GOVERNMENT OF KISUMU
DEPARTMENT OF HEALTH

Telephone: 0724804676
E-mail: ercjoorth@gmail.com
Website: www.jootrh.go.ke
When replying please quote

JARAMOGI OGINGA ODINGA TEACHING & REFERRAL HOSPITAL
P.O. BOX 849
KISUMU

Ref: ISERC/JOOTRH/685/23

Date: 3rd April, 2023

RE: APPROVAL: STUDY TITLE:
MOTHERS' KNOWLEDGE AND PRACTICES OF BABY-FRIENDLY HOSPITAL INITIATIVE AT JARAMOGI OGINGA ODINGA TEACHING AND REFERRAL HOSPITAL, KENYA .

REF: ISERC/JOOTRH/685/23

To: Wycliffe Agutu

Dear Wycliffe,

RE: STUDY TITLE

This is to inform you that JOOTRH ISERC has reviewed and approved your above research proposal. Your application approval number is ***ISERC/JOOTRH/685/23.*** The approval period is ***3rd April, 2023 – 3rd April, 2024.***

This approval is subject to compliance with the following requirements;

i. Only approved documents including (informed consents, study instruments, MTA) will be used.
ii. All changes including (amendments, deviations, and violations) are submitted for review and approval by JOOTRH - ISERC.
iii. Death and life-threatening problems and serious adverse events or unexpected adverse events whether related or unrelated to the study must be reported to JOOTRH - ISERC within 72 hours of notification.
iv. Any changes, anticipated or otherwise that may increase the risks or affected safety or welfare of study participants and others or affect the integrity of the research must be reported to JOOTRH - ISERC within 72 hours.
v. Clearance for export of biological specimens must be obtained from relevant institutions.
vi. Submission of a request for renewal of approval at least 60 days prior to expiry of the approval period. Attach a comprehensive progress report to support the renewal.
vii. Submission of an executive summary report within 90 days upon completion of the study to JOOTRH - ISERC.
viii. In case the study site is JOOTRH, kindly report to the Chief Executive Officer before commencement of data collection.

Prior to commencing your study, you will be expected to obtain a research license from National Commission for Science, Technology and Innovation (NACOSTI) https://resarch-portal.nacosti.go.ke and also obtain other clearances needed.

Yours sincerely,

JOOTRH ETHICS & REVIEW COMMITTEE
P. O. Box 849 - 40100
KISUMU

ANTONY AYORA

SECRETARY-ISERC

JOOTRH- KISUMU

Appendix IX : NACOSTI Research Authorization

REPUBLIC OF KENYA

NATIONAL COMMISSION FOR SCIENCE,TECHNOLOGY & INNOVATION

Ref No: **874178**

Date of Issue: **09/December/2022**

RESEARCH LICENSE

This is to Certify that Mr.. Wycliffe Otieno Agutu of Masinde Muliro University of Science and Technology, has been licensed to conduct research as per the provision of the Science, Technology and Innovation Act, 2013 (Rev.2014) in Kisumu on the topic: Mother\'s Knowledge and Practices of Baby Friendly Hospital Initiative at Jaramogi Oginga Odinga Teaching and Referral Hospital for the period ending : 09/December/2023.

License No: **NACOSTI/P/22/22492**

874178

Applicant Identification Number

Director General
NATIONAL COMMISSION FOR SCIENCE,TECHNOLOGY & INNOVATION

Verification QR Code

NOTE: This is a computer generated License. To verify the authenticity of this document, Scan the QR Code using QR scanner application.

See overleaf for conditions

Appendix X: IERC Research Authorization

MASINDE MULIRO UNIVERSITY OF SCIENCE AND TECHNOLOGY

Tel: 056-31375
Fax: 056-30153
E-mail: ierc@mmust.ac.ke
Website: www.mmust.ac.ke

P. O. Box 190,
50100.
Kakamega,
KENYA

Institutional Ethics and Review Committee (IERC)

REF: MMU/COR: 403012 Vol 6 (01)

Date: November 25th, 2022

To: Wycliffe Otieno Agutu,
Masinde Muliro University of Science and Technology

Dear Sir.,

RE: MOTHERS KNOWLEDGE AND PRACTICES OF BABY FRIENDLY HOSPITAL INITIATIVE AT JARAMOGI OGINGA ODINGA TEACHING AND REFERRAL HOSPITAL, KENYA

This is to inform you that the ***Masinde Muliro University of Science and Technology Institutional Ethics and Review Committee (MMUST-IERC)*** has reviewed and approved your above research proposal. Your application approval number is **MMUST/IERC/110/2022.**The approval covers for the period between ***November 25th, 2022*** to ***November 25th, 2023.***

This approval is subject to compliance with the following requirements;

i. Only approved documents including informed consents, study instruments, MTA will be used.
ii. All changes including (amendments, deviations, and violations) are submitted for review and approval by ***MMUST-IERC.***
iii. Death and life threatening problems and serious adverse events or unexpected adverse events whether related or unrelated to the study must be reported to ***MMUST-IERC*** within 72 hours of notification
iv. Any changes, anticipated or otherwise that may increase the risks or affected safety or welfare of study participants and others or affect the integrity of the research must be reported to ***MMUST-IERC*** within 72 hours
v. Clearance for export of biological specimens must be obtained from relevant institutions.
vi. Submission of a request for renewal of approval at least 60 days prior to expiry of the approval period. Attach a comprehensive progress report to support the renewal.
vii. Submission of an executive summary report within 90 days upon completion of the study to ***MMUST-IERC***.

Prior to commencing your study, you will be expected to obtain a research license from National Commission for Science, Technology and Innovation (NACOSTI) https://research-portal.nacosti.go.ke and also obtain other clearances needed.

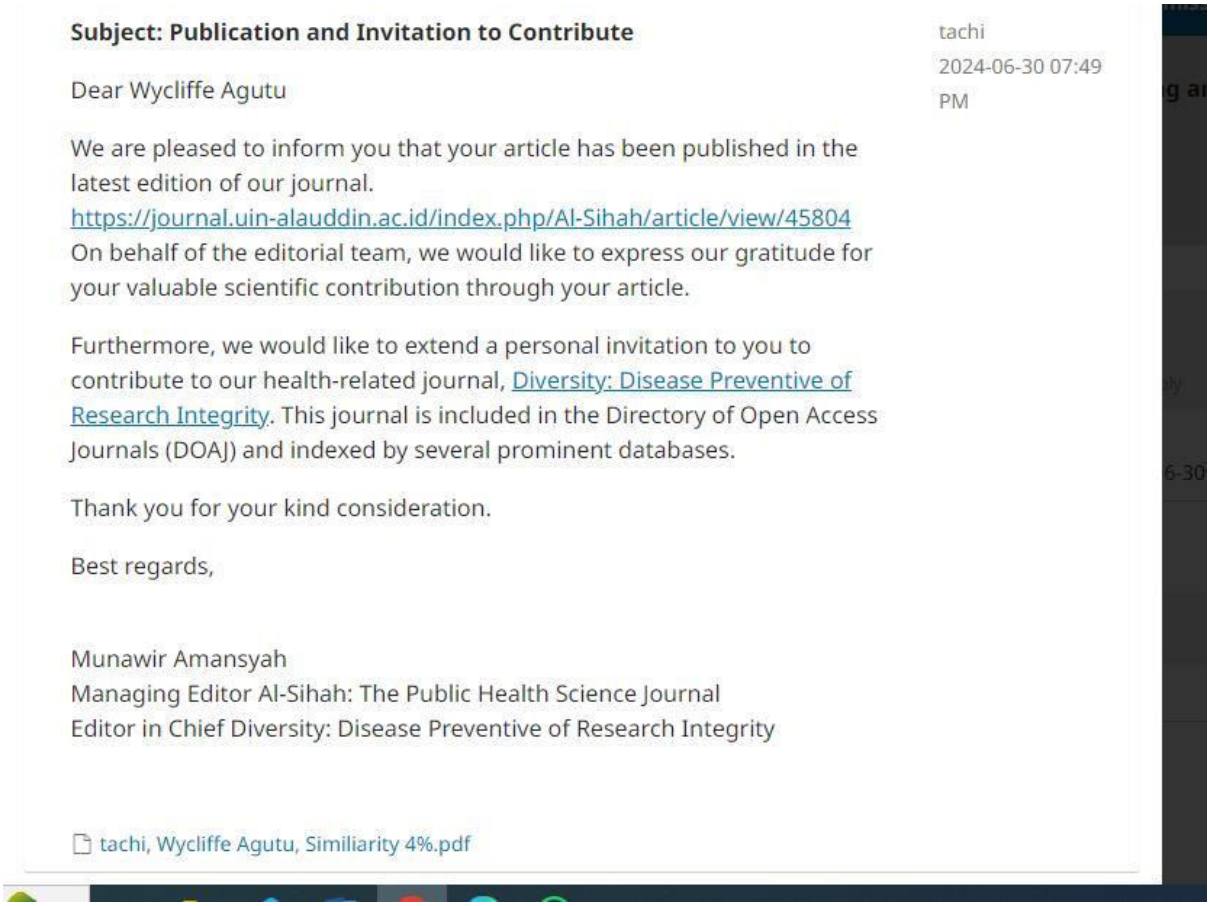
Yours Sincerely,

Prof. Gordon Nguka (PhD)
Chairperson, Institutional Ethics and Review Committee

Copy to:
- The Secretary, National Bio-Ethics Committee
- Vice Chancellor
- DVC (PR&I)

Appendix XI: Map of Kenya showing the location of JOOTRH

Appendix XI: Evidence of Publication



Subject: Publication and Invitation to Contribute

tachi
2024-06-30 07:49 PM

Dear Wycliffe Agutu

We are pleased to inform you that your article has been published in the latest edition of our journal.
https://journal.uin-alauddin.ac.id/index.php/Al-Sihah/article/view/45804
On behalf of the editorial team, we would like to express our gratitude for your valuable scientific contribution through your article.

Furthermore, we would like to extend a personal invitation to you to contribute to our health-related journal, Diversity: Disease Preventive of Research Integrity. This journal is included in the Directory of Open Access Journals (DOAJ) and indexed by several prominent databases.

Thank you for your kind consideration.

Best regards,

Munawir Amansyah
Managing Editor Al-Sihah: The Public Health Science Journal
Editor in Chief Diversity: Disease Preventive of Research Integrity

tachi, Wycliffe Agutu, Similiarity 4%.pdf