

**PREDICTORS OF EXCLUSIVE BREAST-FEEDING AMONG WOMEN IN  
FORMAL EMPLOYMENT ATTENDING CHILD WELFARE CLINIC AT  
JARAMOGI OGINGA ODINGA TEACHING AND REFERRAL HOSPITAL**

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**A thesis Submitted in Partial Fulfillment for the requirements for the award of  
the Degree of Master of Science in Advanced Nursing Practice (Midwifery) of  
Masinde Muliro University of Science and Technology**

**February, 2019**

## DECLARATION

### DECLARATION

This thesis is my original work prepared with no other than the indicated sources and support and has not been presented elsewhere for a degree or any other award.

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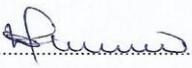
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### CERTIFICATION

The undersigned certify that they have read and hereby recommend for acceptance of Masinde Murilo University of Science and Technology a thesis '**Predictors Of Exclusive Breast-Feeding Among Women In Formal Employment Attending Child Welfare Clinic At Jaramogi Oginga Odinga Teaching And Referral Hospital**'.

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Last, but most of all, I want to thank my husband, Ochiba Lukandu for his unwavering support, patience and guidance during thesis writing period.

## **DEDICATION**

This thesis is dedicated to my youngest daughter Imani Hawwa, who was born at the time I was pursuing my graduate studies. Special dedication to my parents, husband and our other four children Maryam, Jameela, Okutoyi and Lukandu. You have been my greatest source of inspiration.

## ABSTRACT

Breast-feeding lays the foundation for healthy growth and child development. Despite the documented benefits of exclusively breast-feeding, studies have found that several predictors influence the duration of breast-feeding and few researches have assessed the predictors of exclusive breast-feeding among women informal employment in Kenya. The objective of this study was to determine the predictors of exclusive breast-feeding among mothers in formal employment attending child welfare clinic at the Jaramogi Oginga Odinga Teaching and Referral Hospital (JOOTRH). Descriptive analytical cross-sectional design was used in the study. Three hundred and ninety-one (391) women in formal employment with infants aged one year and below were purposively sampled. Fifty-one (51%) of the women in formal employment were practicing EBF. The study identified three elements as predictors of EBF; respondents who were more knowledgeable on the benefits of EBF to the mother (aOR=3.22, 95% CI [1.63-6.35], p=0.001) were 3 times more likely to EBF while those who delivered in public hospitals (aOR=12.48, 95% CI [1.46-10.7], p=0.021) were 12 times more likely to EBF than those that delivered in private hospitals. The study also revealed that women who were more knowledgeable on risks of failure to EBF their babies had higher odds of EBF (aOR=4.10, 95% CI [2.07-8.12], p<0.001). The major constraints hindering women in formal employment from practicing EBF were resumption to work after delivery, lack of breast-feeding facilities at work place, support and long working hours. The predictors of Exclusive breastfeeding among women in formal employment include knowledge and place of delivery. Though the women are knowledgeable on EBF several challenges hinder them from effectively practicing EBF. There is therefore urgent need for strategies that will enhance EBF for women in formal employment.

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## **ABBREVIATIONS AND ACRONYMS**

<b>AAFP</b>	:	American Academy of Family Physicians
<b>ANC</b>	:	Antenatal Clinic
<b>EBM</b>	:	Expressed breast milk
<b>BFHI</b>	:	Baby Friendly Hospital Initiative
<b>BLS</b>	:	Bureau of Labour Statistics
<b>CWC</b>	:	Child Welfare Clinic
<b>EBF</b>	:	Exclusive Breastfeeding
<b>EBM</b>	:	Expressed Breast Milk
<b>JOOTRH</b>	:	Jaramogi Oginga Odinga Teaching and Referral Hospital
<b>HIV</b>	:	Human Immuno-deficiency Syndrome
<b>KDHS</b>	:	Kenya Demographic and Health Survey
<b>ILO</b>	:	International Labor Organization
<b>IYCF</b>	:	Infant and Young Child Feeding
<b>MCH / FP</b>	:	Maternal Child Welfare Clinic and Family Planning
<b>MMUST</b>	:	Masinde Muliro University of Science and Technology
<b>MoH</b>	:	Ministry of Health
<b>MTMSGs</b>	:	Mother to Mother Support Groups
<b>NHMRC</b>	:	National Health and Medical Research Council
<b>PNC</b>	:	Post-Natal Clinic
<b>UNICEF</b>	:	United Nations Children’s fund
<b>WHA</b>	:	World Health Assembly
<b>WHO</b>	:	World Health Organization

## **CHAPTER ONE**

### **1.0 Overview**

This chapter presents the background of the research, problem statement followed by research objectives, research questions, justification and the conceptual framework.

### **1.1 Background**

Since 2001 the World Health Organization (WHO) has recommended exclusive breast-feeding for the first six months of life. Exclusive breast-feeding(EBF) refers to the practice of feeding the baby with only breast milk (including expressed breast milk) and allows the baby to receive vitamins, minerals or medicine (WHO, 2002). Water, breast milk substitutes plus other liquids and solid foods are excluded. Evidence has shown that approximately 40% of children aged less than six months are not exclusively breast-fed and about half of the children are stopped from breast-feeding before their second birthday (UNICEF, 2014). Consequently, studies have shown that sub-optimal breast-feeding, especially non-exclusive breast-feeding in the first six months of infancy contribute to 1.4 million deaths ,10% of disease burden in under-fives globally (Cai, Wardlaw & Brown, 2012;WHO, 2009) while about one-quarter (26%) of Kenyan children are stunted and a further 8% are severely stunted (KDHS, 2014).

It is estimated that universal coverage with general nutritional interventions including exclusive breast-feeding promotion could prevent 8% child deaths under the age of six months and 10-15% of stunting (WHO, 2011). To achieve this, mothers and families need support to initiate and sustain appropriate infant and young child feeding practices.

Despite increased rates of initiation, studies over the years have shown that working mothers find it difficult to meet personal goals and to adhere to the expert recommendations for EBF and continued breast-feeding (Lakati, *et al.*, 2002; Dundery & Laar, 2016; Murtagh & Moulton, 2011). Some of the documented predictors that influence EBF and duration of breast-feeding include but are not limited to; maternal age, level of education, mother's perceptions that she is producing inadequate milk, societal barriers such as employment and length of maternity leave (Hassan *et al.*, 2014; Okwy-Nweke, 2014; Skafida, 2012).

Work is essential for the economic survival of many women and their families but they also have to fulfill the role of providing optimum nutrition to their babies through breast-feeding; hence the right to continue breast-feeding upon return to work and access to appropriate and hygienic facilities for nursing are important for the health of the working mother and her child (ILO, 2014). However, studies show that it has become increasingly difficult for women in employment to practice EBF and continued breast-feeding for at least two years after they resume work from maternity leave (Alina *et al.*, 2012; Kimani-Murage *et al.*, 2015). This is due to early resumption to work post-delivery and lack of or inadequate facilities to support breast-feeding at work place (Handayani *et al.*, 2013).

The population of women becoming employed during their childbearing years is growing. According to the U.S Bureau of Labor Statistics (BLS, 2015), women constituted 52% of all workers employed in management and professional related occupations in 2014. Evidence indicates that approximately 70% of employed mothers with children younger than 3 years' work full time and a third of these mothers return to work within 3 months after birth while two-thirds return within 6 months. Majority of these women do not benefit from workplace policies that

support nursing mothers to continue breast-feeding (International Labor Organization (ILO,2014).

In 2011, Kenyan women represented 47% of the workforce both formal and informal sectors (World Bank, 2011). The number has since increased. Evidence from KDHS(2014) indicate that 61% of women in Kenya have joined the labor market. While the number of new mothers in the workplace is steadily increasing, an early return to work and inconvenient workplace conditions discourage the women from EBF or worse still leads to early cessation of breast-feeding ( Hassan *et al.*, 2014;Kimani-Murage *et al.*, 2015). On average a working woman spends eight or more hours per day at the work place which is usually a reasonable distance from home. This implies that it is difficult for them to breast-feed from home during tea or lunch breaks.

In Kenya the push for EBF appears to be yielding positive results (Kimani-Murage *et al.*, 2015). Key indicators in the Kenya Demographic Health Survey (KDHS) indicate a marked increase in the proportion of children younger than 6 months who are exclusively breast-fed from 32% in the 2008-9 KDHS to the current 61% against country's target of 80% (KDHS, 2014) and global target of 50% (UNICEF, 2014). The improvement in EBF rates can be attributed to increased awareness by the Ministry of Health through the media and breast-feeding policies, including enactment of the Breast-milk Substitutes Regulation and Control Act, 2012 (Kenya Laws, 2012) which regulates marketing and distribution of breast-milk substitutes. The act also recommends safe and adequate nutrition for infants through promotion of breast-feeding. The law further prohibits the promotion of complementary foods and forbids health workers from accepting gifts from formula manufacturers. Despite

the above improvement the figures are still not at a desirable level (MOH, 2014) and several barriers to EBF exist.

Studies have concluded that women employed full time are less likely to continue breast-feeding upon return to work (Lakati *et al.*, 2002; Nyanga, 2012; Kimani-Murage *et al.*, 2015) and for working mothers, there are more obstacles and barriers for practicing breast-feeding successfully (Handayani *et al.*, 2013); hence acquiring data on predictors of EBF among women in formal employment will strengthen policy implementation which will consequently enhance designing of programmes that will improve WHO recommended infant feeding practices.

## **1.2 Problem Statement**

The benefits of breast-feeding for both mother and infant are well documented in literature (WHO, 2009). Breast-feeding is directly linked to a reduction in the number of children who die before their fifth birthday. These infants can be saved through the natural protection of mother's milk without any other supplements for up to the first six months of their lives (Asim *et al.*, 2014).

Despite scientific evidence authenticating the benefits of breast-feeding in child survival, there is still stagnation in global rates of EBF and most children below six months in Sub-Saharan Africa are not exclusively breast-fed (Cai *et al.*, 2012). Though Kenya has noted an increase in the EBF rates over the last decade, the prevalence is still low (61%).

Studies on maternal work and EBF have looked into the EBF practice among working mothers and have found that mothers in this sector are unable to exclusively breast-feed as recommended by the WHO due to conditions prevalent at their work places (Danso, 2014); KDHS, 2014). Even though exclusive breast-feeding has been

documented a significant predictor of outcomes for mother and child yet the practice is quickly abandoned due to work and employment factors (Dun-dery & Laar, 2016).

Studies in different contexts have identified different predictors of EBF among working women such as maternal level of education (Jessri *et al.*, 2013), lack of knowledge or competence (Agbo *et al.*, 2013), socio-cultural and economic factors among others but little evidence exists to show the predictors of exclusive breast-feeding among working women in East Africa and Kenya at large. Earlier studies in Kisumu (Nyanga *et al.*, 2012 & Okanda *et al.*, 2014; did not put much emphasis on working women. In addition, few researches have assessed the predictors of EBF among working women in Kenya and there is a paucity of scientific data explaining why EBF is not practiced optimally among working women with regards to the Kenyan perspective. Consequently, little evidence exists to show the proportion of women in employment practicing EBF in JOOTRH and the larger Kisumu County. This study hence aimed to determine the predictors of exclusive breast-feeding among women in formal employment seeking Child Welfare Clinic services in JOOTRH.

### **1.3 General Objective**

To determine the predictors of exclusive breast-feeding among working class mothers in formal employment attending the Child Welfare Clinic at Jaramogi Oginga Odinga Teaching and Referral Hospital (JOOTRH).

#### **1.4 Specific Objectives**

- i. To assess knowledge level on exclusive breast-feeding among women in formal employment attending child welfare clinic at JOOTRH.
- ii. To determine work place support on exclusive breast-feeding practice for women in formal employment attending child welfare clinic at JOOTRH.
- iii. To identify constraints to exclusive breast-feeding among women in formal employment attending child welfare clinic at JOOTRH.

#### **1.5 Research Questions**

- i. What is the level of knowledge on exclusive breast-feeding among women in formal employment attending child welfare clinic at JOOTRH?
- ii. Is there work place support on exclusive breast-feeding practice for women in formal employment attending Child welfare clinic at JOOTRH?
- iii. What are the constraints to exclusive breast-feeding practice among women in formal employment attending child welfare clinic at JOOTRH?

#### **1.6 Justification of the Study**

This research was an undertaking to determine the predictors of exclusive breast-feeding among women in formal employment. By establishing the predictors and how they influence the practice of EBF among women in formal employment, policy making and a change of interventional strategy to empower working women practice EBF successfully will be initiated. The study findings therefore provided a guide to the researcher in proposing recommendations for policy implementation and formulate feasible EBF guidelines to mothers who are working in a bid to improve compliance with EBF according to WHO recommendations.

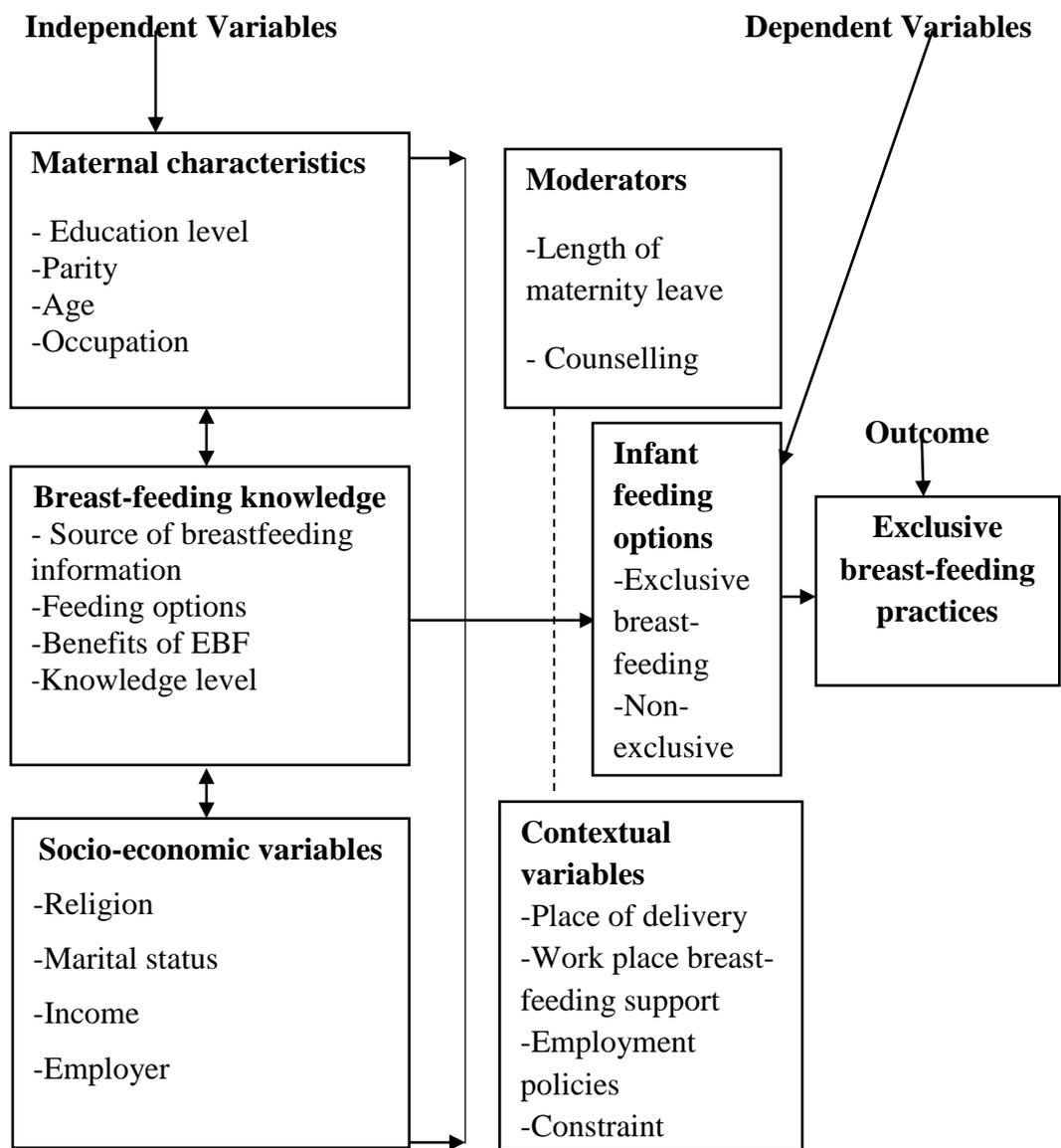
### **1.7 Limitations of the Study**

The study did not go without limitations. One of the limitations is that study was limited to only mothers attending clinic at JOOTRH which is a small representation of women in formal employment. This limits the generalizability of the findings to the general population. Another limitation is that a causal relationship could not be established between EBF and the associated factors since it was a cross-sectional study.

### **1.8 Conceptual Framework**

The conceptual framework figure 1.1 was adapted from Ochola, (2008). It illustrates the association between factors that predict the practice of exclusive breast-feeding and EBF. The predictors include maternal characteristics such as age, parity, knowledge on breast-feeding and others that may influence a working mother's decision to either EBF or non EBF. Higher knowledge, increased maternal age and parity are associated with the possibility of increased chances of EBF. Socio-economic factors have been documented as important predictors of EBF among women in employment (Motee, 2013; Murtagh & Moulton, 2011). Type of employer (private or government will determine the kind of support accorded to breast-feeding mothers to enable them continue with EBF upon return to work. Women who get adequate work place support are likely to adhere to the EBF practices.

The practice of non- practice or EBF is further influenced by employment policies which include maternity protection act that recommends a not less than 14 weeks of maternity leave and WHO's policy on Infant and Young Child Feeding which encourages EBF among all with infants less than 6 months old and a further continuation of breast-feeding for at least two years.



**Figure 1.1: Conceptual framework**

Source: (Ochola, 2008)

## 1.9 Operational Definition of Terms

**Complementary feeding:** Refers to feeding a child with foods in addition to breast milk after six months of exclusive breast-feeding.

**Constraints:** Something that limits or restricts one's ability to achieve a goal

**Exclusive breast-feeding:** Refers to feeding a child on breast milk alone and no other liquids (including water) or food on demand for the first six months of life.

**Formal employment:** Where people work to receive a regular taxed wage and are assured of certain rights e.g. paid holidays, sickness leave.

**Mixed feeding** – Feeding the baby with other foods in addition to breast milk in the first six months of life.

**Pre-lacteal foods:** Refers to non- breast milk feeds given before the initiation of breast-feeding.

**Replacement feeding:** Refers to cessation of or non- practice of breast-feeding.

**Predictors:** Variables that provide information on an associated dependent variable regarding a particular outcome. It explains changes in the response.

## CHAPTER TWO

### LITERATURE REVIEW

#### 2.0 Overview

This chapter entails review of relevant literature on exclusive breast-feeding. A general overview of breast-feeding and EBF is given. The chapter then describes the benefits of breast-feeding and exclusive breast-feeding.

#### 2.1 Breast-feeding

Breast-feeding is a basic human activity, vital to infant and maternal health yet it remains one of the most cost-effective investments in child survival development, and life-long health (Svensson *et al.*, 2015). Internationally its recommended that women should EBF their infants for the first 6 months and thereafter continue to breast-feed into the second year of life or longer (WHO, 2002; American Academy of Paediatricians [AAP], 2005). Exclusive breast-feeding is the practice of feeding the baby with only breast milk (including expressed breast milk) and allows the baby to receive vitamins, minerals or medicine (WHO, 2002). The evidence-based recommendation of the National Health and Medical Research Council (NHMRC) is that infants be exclusively breast-fed (WHO, 2009) until around 6 months of age when solid foods are introduced, and that breast-feeding be continued until 12 months of age and beyond, for as long as the mother and child desire (AAP, 2008).

To strengthen maternity practices in support of breast-feeding; WHO and UNICEF launched the Baby Friendly Hospital Initiative (BFHI) in 1992. The foundation for the BFHI is the ten steps to successful breast-feeding described in protecting, promoting and supporting breast-feeding. These steps are based on scientific evidence and the experience of respected authorities (WHO, 2009). Further

recommendations by WHO and UNICEF is that working mothers should be able to continue breast-feeding and caring for their children upon return to paid employment. This can be accomplished through enactment and implementation of maternity protection legislation and related policies consistent with ILO Maternity Protection Convention, 2000 No. 183 and Maternity Protection Recommendation, 2000 No. 191 which recommends maternity leave, day-care facilities and paid breast-feeding breaks to be availed for all women employed outside the home (WHO,2002).

### **2.1.1 Breast Milk Composition**

Breast milk is nature's most precious gift to the infant and is viewed as the biological norm for infants and young children and remains an essential part of the overall reproductive cycle for the mother (NHMRC, 2013). Breast milk provides essential, irreplaceable nutrition for a child's growth and development. Infants who are breast-fed exclusively receive stronger protection against infection than those who are not (Slavit, 2009). Breast milk is easily digested and contains all the nutrients that an infant need in the first 6 months of life, including fats, carbohydrates, proteins, vitamins, minerals and water. An exclusively breast-fed child does need not water as milk constitutes over 80% water (WHO, 2009).

### **2.1.2 Initiating and Maintaining Lactation**

One of the most important factors in successful lactation is the effective removal of milk from the breasts. The alveoli of the breast mature during pregnancy under the control of pregnancy hormones. Milk starts to be produced in larger amounts between 2 and 4 days after birth, making the breasts feel full. The process of milk production is controlled by hormones prolactin and oxytocin produced in the anterior

pituitary part of the brain (Svensson *et al.*, 2015). Once breast-feeding is initiated, the rate of milk production is regulated to match the amount of milk removed, with the infant controlling milk intake. Unrestricted feeding, both day and night, is an important factor in successfully establishing breast-feeding and results in optimum milk production. Mothers who are away from their infants can sustain successful lactation through milk expression where breast milk is expressed and the baby can be fed at a later hour (Slavit , 2009).

## **2.2 Benefits of Breast milk**

The (WHO) describes breast-feeding as an unequalled way of providing ideal food for healthy growth and development of infants (NHMRC, 2013). The benefits accrued to breast-feeding are numerous. Breast-feeding offers short term and long-term benefits to the mother and the infant. Breast milk is particularly important while an infant's immune system is immature but continues to offer significant protection throughout lactation (Kramer *et al.*, 2009). Factors present in breast milk that provide immune protection include immunoglobulin's A, G and M (Svensson *et al.*, 2015).

## **2.3 Benefits of breast-feeding to the baby**

For the developing infant, breast-feeding confers improved visual acuity, psychomotor development (Horta *et al.*, 2007) and cognitive development,(Kramer *et al.*, 2009). It helps ensure a healthy brain development in children, longer school attendance, and higher IQ (WHO and UNICEF, 2014). A study by (Victora *et al.*, 2015) that assessed the association between breast-feeding and intelligence found positive influence between breast-feeding and improved performance in intelligence

tests for up to 30 years later, and was positively associated with increased educational attainment.

Infants who are breast-fed stand a higher chance of better jaw shape and oro-facial structure development (NHMRC, 2013; Madeiros *et al.*, 2009). Findings from an analytical study to assess the association between anterior open bite and harmful habits in children revealed an increased risk of malocclusion in children who were exposed to shorter breast-feeding duration (Maria *et al.*, 2014). Breast-feeding reduces the lifelong risk on communicable chronic diseases for the child such as diabetes type II e.g, according to the American Academy of Paediatrics (AAP, 2012), infants who are not breast-fed tend to have higher blood pressure, are at greater risk of developing type II diabetes and obesity later on in life (WHO, 2009). Additionally, systematic reviews (Horta *et al.*, 2007) revealed long term effects of breast-feeding such as protective effect against obesity and overweight later in life. Breast-feeding also increases attachment between a mother and her baby, thus promoting emotional bonding.

#### **2.4 Benefits of breast-feeding to the mother**

The benefits of breast-feeding are not confined to infants and children alone. Mothers who breast-feed within the first 30-60 minutes after the birth of their infants and who continue breast-feeding at least through the baby's first year will gain both immediate and lifelong health benefits (WHO, 2009). The longer a woman spends breast-feeding, the greater the beneficial effect.

Breast-feeding hastens uterine involution and reduces the risk of postpartum hemorrhage thus reducing maternal mortality (Svensson *et al.*, 2015). Benefits of continued breast-feeding include increased child spacing, a decreased risk of ovarian

cancer and premenopausal breast cancer and possibly a decreased risk of hip fractures and osteoporosis following menopause (Ambales *et al.*, 2014).

## **2.5 Exclusive breast-feeding**

According to WHO and UNICEF, Exclusive breast-feeding is ideal nutrition and is sufficient to support optimal growth and development for the first 6 months following birth. EBF prevents diseases such as gastroenteritis (necrotizing enterocolitis), lower respiratory tract infections and otitis media. The advantages of EBF compared to partial breast-feeding were recognised in 1984, when a review of available studies found that the risk of death from diarrhoea of partially breast-fed infants 0–6 months of age was 8.6 times the risk for exclusively breast-fed children (WHO, 2009). Consequently, in May 2001, the World Health Assembly (WHA) passed a resolution recommending EBF for 6 months.

To support the WHO recommendations are systematic review findings (Kramer *et al.*, 2009), which included two controlled trials and 18 other studies conducted in both developed and developing countries. The findings revealed that EBF of infants without inclusion of other foods or liquids, for six months has several advantages over exclusive breast-feeding for 3-4 months followed by mixed breast-feeding. The decision not to breast-feed has major long-term negative effects on the health, nutrition and development of children and on women's health (NHMRC, 2013). Infants who are not breast-fed exclusively experience more episodes of diarrhoea, ear infections, and lower respiratory tract infections and are at higher risk of sudden infant death syndrome, diabetes, and obesity (Yeneabat *et al.*, 2012).

### **2.5.1 Benefits of exclusive breast-feeding**

The benefits of EBF are widespread. For the mother, EBF can delay the return of fertility and accelerate recovery of pre-pregnancy weight. Mothers who breast-feed exclusively and frequently have less than a 2% risk of becoming pregnant in the first 6 months postpartum, provided that they still have amenorrhea (WHO, 2009). In addition, EBF ensures a reduced drain on household resources for breast- milk substitutes and other supplies for families (UNICEF/WHO, 2013).

Although it is challenged by low acceptability and feasibility, EBF is considered by far the best infant feeding option for women who are HIV positive (UNICEF, 2014). EBF reduces the risk of mother - to - child transmission (MTCT) of HIV and remains the best option for many HIV infected mothers in sub-Saharan Africa (Okanda *et al.*, 2014). The recommendation by WHO is that mothers who are HIV-infected take antiretroviral (ARV's) drugs and exclusively breast-feed their babies for a period of six months (UNICEF, 2012). In the event that the ARVs are not available, mothers should be counseled to exclusively breast-feed for 6 months and continue breast-feeding thereafter unless environmental and social circumstances are safe for, and supportive of, feeding with supplementary feeds (WHO, 2015).

To the employers, a healthy mother means an employee who is absent less often and able to contribute more productively to the workplace (Murtagh & Moulton, 2011). Infants who are breast-fed exclusively receive stronger protection against infection in the first several months of life than those who are not (Slavit, 2009) hence breast-feeding is likely to decrease employee absences associated with caring for a sick child since it has important short- and long-term health benefits for both children and women (Weber *et al.*, 2011). Exclusively breast-fed children fall sick less often, so their mothers are absent from work less often, too (Skafida, 2012).

### **2.5.2 Global exclusive breast-feeding rates**

Rates of EBF tend to increase when effective policy and regulatory frameworks and guidelines exist and when comprehensive programming is implemented. A recent report by World Health Organization showed a global rate of 38% for infants aged 0 to 6 months who are EBF (WHO, 2014). According to UNICEF, 2009, the global EBF rates have been increasing annually. Between 1985 and 1995, global rates of EBF increased by 2.4% per year on average (increasing from 14% to 38% over 10 years) but decreased subsequently in most regions (UNICEF, 2014).

The rates further increased to 39% by 2010 with biggest improvements noted in west and central Africa (Cai *et al.*, 2012). Despite these efforts, data from various sources confirm contrary findings as EBF rates have remained low in most developing countries (Bora, 2014) where only 22 million infants are exclusively breast-fed out of approximately 56 million who are below six months, while over 34 million children are not (UNICEF/WHO, 2013).

While breast-feeding rates have increased in all regions of the world, global progress has stalled. Evidence indicates that since 1990, there has been negligible progress to raise the global rate of exclusive breast-feeding and it has remained under 40 per cent. Over 80% of these children who do not benefit from EBF are born in developing countries (UNICEF/WHO, 2013). However, some countries like Cambodia, Sri Lanka, Malawi and Rwanda have made achievements that surpass all expectations. In Rwanda EBF rates at six months are at 88.4% and even by 20-23 months of age most babies 77% are still breast-feeding alongside complementary feeds (UNICEF, 2014). The achievements in the mentioned countries are attributed to: Strong leadership that supports Infant and Young Child Feeding policy (IYCF) at all government levels, identification of breast-feeding as highest priority among

child survival interventions and presence of well-articulated policies and guidelines on IYCF and Baby Friendly Hospital Initiative (BFHI) (UNICEF, 2014). Although Australia records some of the highest percentages (96%) of the children ever breast-fed, the rate of EBF remains very low at 15% (NHMRC, 2012). In an effort to raise EBF compliance, the World Health Assembly (WHA) set a global target of increasing EBF for children below six months of age to at least 50 per cent by 2025 (UNICEF, 2014). The target is yet to be realised.

### **2.5.3 Exclusive breast-feeding in Kenya**

In Kenya the push for exclusive breast-feeding appears to be yielding positive results (Kimani-Murage *et al.*, 2015). According to Kenya Demographic Health Survey (KDHS, 2014), there is an increase in the percentage of children younger than 6 months who are exclusively breast-fed from 32% in the 2008-9 to 61% against the country's target of 80% and global target of 50%. The Kenya government established a comprehensive infant and young child feeding (IYCF) programme in 2007 (UNICEF, 2009); this coupled with other efforts such as introduction of mentor mother programs (MOH, 2014) and availability of breast-feeding facilities in some private companies such as the Rose flower farm in Naivasha, Safaricom and Kenya Women Finance trust; may have contributed to the increase (Irin, 2012; Kimani-Murage *et al.*, 2015). Though Kenya has surpassed the WHA recommendation of EBF of 50%, the situation is still wanting since many children are dying from non-exclusive breast-feeding related infections such as diarrhea and pneumonia (KDHS, 2014).

## **2.6. Predictors of Exclusive Breast-feeding among Working Mothers**

Breast-feeding is a significant predictor of outcomes for mother and child yet the practice is quickly abandoned due to work and employment factors (Dundery & Laar, 2016). The infant feeding decision is complex and involves the influence of psychological, social, and economic factors, and health care system (Handayani *et al.*, 2013). In spite of the considerable awareness of the benefits of EBF, several studies have revealed low EBF rates among women with infants below six months (Tsai, 2013; Alina *et al.*, 2012; Kimani-Murage *et al.*, 2015). Other studies have reported barriers accounting for this situation which include early return to work after delivery, painful breasts, lack of knowledge on the importance of EBF and perceived lack of milk.

The challenges facing breast-feeding women are amplified among working women. Lack of breast-feeding facilities and support at work place for continued breast-feeding have been negatively associated with non-EBF (Alina *et al.*, 2012). While women may be knowledgeable on EBF, the success of EBF is subject to the nature of a women's job and occupation especially at places where women are engaged in work away from home, and long working hours.

### **2.6.1 Maternal characteristics**

Maternal characteristics vary widely within different contexts. Existing evidence shows that maternal characteristics such as education and parity among others are significant predictors of EBF. A study in Canada (Jessri *et al.*, 2013) that assessed predictors of exclusive breast-feeding revealed that mothers choice to EBF was positively influenced by education and parity.

### **2.6.2 Socio-economic predictors**

Other studies (Hassan *et al.*, 2014; Nyanga *et al.*, 2012) found significant associations between marital status, parity and EBF. In these studies, women who were married and those that had higher number of children were more likely to EBF. Even though being married has been positively associated with the practice of EBF, contrary findings were revealed in a study done in Kisumu by (Okanda *et al.*, 2014) whereby marriage had a negative influence on EBF as compared to being single.

### **2.6.3 Education**

While breast-feeding is a natural act (WHO, 2002), successful breast-feeding is a learned behaviour. Educational programs aimed at breast-feeding teaching have been shown to increase the proportion of women who initiate breast-feeding immediately after birth by 23% and the number of women who continue to breast-feed for one to three months by 39% (Slavit W, 2009).

Knowledge on EBF, education, guidance and support of mothers are highly imperative in breast-feeding promotion. The National Health and Medical Research Council (NHMRC) recommend routine breast-feeding education including EBF as part of antenatal care (ANC) to strengthen existing knowledge on breast-feeding. Consequently the use of strategies such as, antenatal education on importance of breast-feeding and BFHI have been used to promote knowledge level in the US and other countries with reasonable success rates (Danso, 2014). Additional use of strategies such as implementation of breast-feeding policies and training of staff on breast-feeding management have equally been proven to positively affect efforts of breast-feeding promotion (Svensson *et al.*, 2015;Skafida, 2012).

Other studies have also suggested that a woman's level of education is directly related to breast-feeding success (Chaudhry *et al.*, 2012; Februhadanty *et al.*, 2012).

This is a knowledge gap that warrants further research. While researching on knowledge and practice of mothers regarding breast-feeding; a hospital study Chaudhary *et al.*, (2012) found that all mothers knew they had to breast-feed their babies but working mothers had better knowledge on the advantages of breast-feeding. While it is not very clear why this is the case, higher education may be associated with higher knowledge hence the practice of positive health behaviour.

In contrast, the situation in Australia is slightly different. Findings from a study in Australian Health Service Workplace to assess female employees perceptions of organizational support for breast-feeding at work found education level to have no effect on the intention to breast-feed by the women (Weber *et al.*, 2011). In the same study it was found that availability of both written and verbal information about breast-feeding had no influence on the women's intention to breast-feed. The subjects examined were all health care workers and majority (84%) had university education.

In Nigeria, while assessing the attitude of working mothers to EBF, (Ekanem, 2012) observed a positive relationship between higher maternal educational level and EBF. This, he concluded, could be informed by the more educated mothers understanding of the health implications of EBF on child's health hence the higher EBF rates. Similar findings were noted in a Ghanaian study (Danso, 2014) which observed the practice of EBF among professional working women. In this study all the women (100%) were aware of the definition of EBF and its benefits. All the participants in the Ghana had university education.

On the contrary, a study in Nigeria to assess mothers' beliefs and obstacles as limitations in promoting EBF among working women (Okwy-Nweke, 2014) found out that a large proportion (61.7%) of the mothers were not practicing EBF. The high

percentage of non-EBF was attributed to the women's lack of knowledge on EBF as they were not convinced that an infant could thrive on breast milk only for the first 6 months of life but by the end of the study, most of the mothers were able to understand the concept of exclusive breastfeeding and showed interest in practicing it. Most respondents had formal education up to secondary level.

In summary, though maternal educational status has been noted to have an influence on the intention and implementation of EBF among working mothers, some studies have reported contrary findings hence the need to do further research on the matter.

#### **2.6.4 Knowledge on breast-feeding**

Maternal knowledge on breast-feeding has been documented as a strong predictor of EBF (Stuebe, & Bonuck, 2011; Nyanga, 2012). Evidence on association between maternal knowledge and breast-feeding duration varies widely. A joint global nutrition report released in 2015 by WHO and UNICEF, indicate a general lack of knowledge on the dangers of failure to exclusively breast-feed and of proper breast-feeding techniques among mothers among others as some of the factors contributing to the low rates of EBF globally. Similarly, another report by (The Surgeon Generals Call to support breast-feeding, 2011) revealed that though a large proportion of women in the United States were aware of the nutritional importance of breast-milk as a source of nutrition for infants, they seemed to lack knowledge about its specific benefits. Consequently, they were unable to cite the risks associated with failure to breast-feed.

Contrary to the reports above studies done over the years indicate high percentages of maternal knowledge on EBF (Netshandama, 2002; Danso, 2014; Dun-dery & Laar, 2016). Other studies have revealed that higher knowledge is positively associated

with the practice EBF(Afrose *et al.*, 2012;Stuebe & Bonuck, 2011). This is an indication of a knowledge gap hence a need for further research.

### **2.6.5 Maternal employment and exclusive breast-feeding**

Exclusive breast-feeding is the cornerstone of child survival and child health because it provides essential, irreplaceable nutrition for a child's growth and development. Even though majority of mothers can successfully initiate breast-feeding, maternal employment outside the home and intentions to work full time are significantly associated with lower rates of initiation and shorter durations of breast-feeding (Murtagh & Moulton, 2011;Nkrumah, 2017).Working mothers are expected to resume their work and perform like normal employees within 2-3 months of giving birth. Unfortunately most of these mothers give up breast-feeding partially or completely because they do not have appropriate time, or place to breast-feed or express and store breast milk (Abigail *et al.*, 2013).

A report by UNICEF during the 2015 breast-feeding week approximated women workers at about 830 million globally. Majority of these women do not benefit from workplace policies that support nursing mothers to continue breast-feeding (ILO, 2014). Mothers who continue breast-feeding after returning to work need the support of their coworkers, supervisors, and others in the workplace; (Murtagh & Moulton, 2011; ILO.2014). In support of breast-feeding, World Health Organization and other health organizations mark a breast-feeding week every year. The focus of the 2015 theme of the World Breast-feeding Week, "Breastfeeding and Work Let's make it work!," emphasized on what could be done to help millions of working mothers give their babies the best possible start in life through supporting stronger workplace policies that promote breast-feeding.

Although EBF is unsatisfactorily practiced among non-working mothers due to cultural influences, lack of family support and busy household schedules, the practice is worse among working mothers (Feburahanty, 2014). The main reasons for non-EBF by working mothers is return to work and limited flexibility to allow for breast-feeding during working hours (Dun-dery & Laar, 2016). A study in Australia to assess perception of female employees on organizational support of breast-feeding revealed several factors that enabled women to continue breast-feeding while at work. Some of these factors include; flexible work options, support from management and colleagues and access to private rooms for expressing breast milk (Weber *et al.*, 2011). These findings are further supported by WHO and UNICEF which emphasize that workplace policies should support all working women from both formal and informal sectors to continue breast-feeding by providing private places for them to express and store breast-milk (WHO & UNICEF, 2012).

In Kenya the government is supporting working women and in providing equity, a national maternity protection legislation that makes it possible for employed women to manage both work and breast-feeding was passed (Employment Act, 2012). Consequently, the government ensures that there is job security after delivery, paid maternity leave for at least 3 months after delivery and retention of 30 days paid annual leave. Despite the available employment act, women are returning to paid employment early (Kimani-Murage *et al.*, 2015).

#### **2.6.6 Workplace support to promote exclusive breast-feeding**

Strong evidence exists to prove that promotion, protection and support of breast-feeding is an exceptionally cost effective strategy for improving child survival and reducing burden of childhood diseases while use of supplemental feeds to feed newborns negatively impact overall infant health as well as breast-feeding outcomes

(WHO, 2009). In addition EBF ensures that the infant receives full nutrition and other advantages of breast milk that include protection against chronic diseases (NHMRC, 2013).

Over the years studies have recommended that the provision of facilities to support breast-feeding in the work place should be encouraged so that maternal employment does not hamper breast-feeding (Hirani & Karmaliani, 2013; Kosmala-anderson & Wallace, 2006; Murtagh & Moulton, 2011). Other studies (Lakati, 2002 ; Weber, 2011) revealed that given opportunities to breast-feed their infants during work, majority of the women will continue to breast-feed thus the need for promotion of breast-feeding practices among employed mothers through implementation of powerful workplace interventions which include among others: educating working mothers about management of breast-feeding during work (Slavit, 2009), enhancing employers awareness about benefits of breast-feeding (NHMRC, 2013), accommodation at the workplace and arranging physical facilities for lactating mothers (Murtagh & Moulton, 2011).

In support of breast-feeding, the International Labour Organization (ILO) through the Maternity and Protection Kit, 2000 under convention No. 183 recommend a maternity leave of not less than 14 weeks. The leave period was reviewed to 18 weeks under recommendation No. 191 (ILO, 2000). The goal of maternity protection legislation is to enable women to combine their reproductive and productive roles successfully and to promote equal opportunities and treatment in employment and occupation. The other elements in maternity protection include breast-feeding breaks, employment opportunities; adequate earnings; decent working time, stability and security of work (UNICEF/WHO, 2013). Unfortunately, most countries are yet

to implement the recommendation. According to ILO, 2014, only 66 member States have ratified at least one of the maternity protection Conventions.

The proportion of countries that meet the standard of at least 14 weeks' leave varies between regions. Evidence indicates that nearly all countries in Eastern Europe and Central Asia meet the standard recommendation (ILO, 2014). The law in Taiwan provides for eight weeks of maternity leave (Tsai, 2013) while Malaysia has a provision of twelve weeks (Alina *et al.*, 2012). Other governments like Nigeria established Baby-Friendly Hospital Initiative (BFHI) in selected centres with the aim of providing mothers and their infants a supportive environment for breast-feeding and to promote appropriate breastfeeding practices (Ekanem, 2012). Despite these efforts studies have shown that breast-feeding support for the working mother has remained unsatisfactory (Hassan *et al.*, 2014;Nkrumah, 2017).

The Kenyan government is among the few countries that has complied with some of the maternity protection recommendations (ILO, 2014). In equity provision, a national maternity protection legislation that makes it possible for employed women to manage both work and breast-feeding was passed in Kenya through EMPLOYMENT ACT CAP.226 (National Council for Law Reporting (NCLR, 2012). In compliance to the act, the government ensures that there is job security after delivery, paid maternity leave for at least 12 weeks after delivery and retention of paid annual leave of 30 working days totaling to 18 weeks. However, evidence indicates that the other benefits including short breast-feeding breaks, flexi-time, space and facilities for mothers to breast-feed and express breast milk are not provided for in the law, and are left at the discretion of the employer (Kimani-Murage *et al.*, 2015). From literature it is not clear how much support employed

mothers in JOOTRH to enable them exclusively breast-feed hence the need to do more research.

To facilitate continued breast-feeding among employed mothers, laws and employer policies have been designed (Murtagh & Moulton, 2011; Liebert, 2010). In 2003, the World Health Organization (WHO) and UNICEF recommended enactment of imaginative legislation protecting the breast-feeding rights of working women and establishment of means for its enforcement by all governments (WHO, 2009). The intended effect of these laws and policies is to provide employers with guidelines for creating a working environment that will enable working women to practise breast-feeding as they work.

A survey on EBF in Nairobi slums by (Kimani-Murage *et al.*, 2015) revealed low rates of EBF among young mothers and working mothers. This was attributed to high poverty levels in the slums which in turn force mothers to resume work shortly after giving birth. In summary work place support remains dismal and few studies have been carried out to show the support accorded to breast-feeding women in paid employment in Kenya hence the need for research in the area.

### **2.6.7 Constraints to Exclusive breast-feeding**

The barriers to EBF have been documented in many studies (Morrow *et al.*, 1999; Abigail *et al.*, 2013; Kimani-Murage *et al.*, 2015). For the working mother, return to work has frequently been found to be a main contributor to the early termination of breast-feeding. Although the right to nutrition is protected by international human rights law, including the Convention on the Rights of the Child, which commit ratifying countries to promote and protect the nutritional wellbeing of women and children (ILO, 2000), there are many barriers that can make it difficult to start and continue breast-feeding (Weber *et al.*, 2011).

According to the American College of Obstetricians and Gynecologists (ACOG,2013), barriers to breast-feeding are multifactorial and include socioeconomic status, education, misperceptions, and social norms. Some of the identified barriers include hospital practices, advertisement of breast milk substitutes, lack of support for the breast-feeding mother and return to work (Agbo *et al.*, 2013).

A large fraction of working women is composed of young women in the reproductive age (U.S BUREAU OF LABOR STATISTICS, 2015). Most of these women endure lengthy, daily separations from their little ones and they are equally torn between devotion to their babies and commitment to work. While employment seems to have a less deleterious effect on initiation of breast-feeding (Murtagh & Moulton, 2011), employment of mothers outside of home has been consistently cited to have a negative influence on EBF (Danso, 2014; Weber *et al.*, 2011; Skafida, 2012; Kimani-Murage *et al.*, 2015). While studying on barriers and facilitators to the practice of breast-feeding among working class mothers in Nigeria, (Abigail *et al.*, 2013) reported low rates of EBF among resident doctors. Work was cited as the main challenge to EBF by this cohort. Similarly, a study examining the practice of EBF among professional working mothers in Ghana (Danso, 2014) reported lower rates (48%) of Professional working mothers able to practice EBF. The low rates of EBF were attributed to pressure of work. Other studies that reported similar findings include a Nyanga (2012) Kenya and (Al-darweesh *et al.*, 2016) Kuwait . According to Nyanga employment affects the practice EBF negatively. A survey on exclusive breast-feeding in Nairobi slums indicted return to work as the main obstacle to exclusive breast-feeding among working mothers (Kimani-Murage *et al.*, 2015).

Contrary findings were noted in Nigeria where while looking at working mother's beliefs as limitations to EBF in Nigeria (Nweke., 2014) concluded that obstacles to EBF seemed to be imaginary and are likely to arise when a mothers mind set is not made up. The findings by Nweke are supported by those of (Februhartanty *et al*, 2012; Murtagh & Moulton, 2011). The studies reported that besides the documented challenges a few women have been identified who were able to EBF. Some of the practices which led to their success include expressing breast milk (Alina *et al.*, 2012) which they leave behind for the infant to be fed on while they are away and workplace support such as availability of breast-feeding rooms and day care centres where women are able to access their infants for breast-feeding during break (Weber *et al.*, 2011; Irin, 2012). Majority of these women work in more developed countries such as Australia which have embraced the international recommended breast-feeding policies.

## **2.7 Summary of Literature Review**

Though most studies report high knowledge levels on breast-feeding and EBF respectively among working women; some reported either lack of knowledge or high knowledge levels on selected topics of breast-feeding. In almost all the studies maternal employment emerged as a major barrier to EBF, the researchers made recommendations to both policy makers and the mothers. However, from literature working women still face major challenges in EBF consequently the EBF rates have consistently remained low with work cited as the main barrier.

## **CHAPTER THREE**

### **RESEARCH METHODOLOGY**

#### **3.0 Overview**

This chapter presents the methods used in the study specifically the study design, study area, study population, sample size, sampling procedures, data collection procedure, data management, analysis and ethical considerations.

#### **3.1 Study Design**

This was descriptive analytical cross-sectional study with a mixed method approach using quantitative and qualitative methods.

#### **3.2 Study Area**

The study was carried out in Jaramogi Oginga Odinga Teaching and Referral Hospital (JOOTRH) a level five hospital located in Kisumu County, Kisumu Central Constituency. The hospital serves a catchment population of 82,000 people (JOOTRH strategic plan, 2011-2016) and is the main referral center in the region. Services offered include curative, preventive, rehabilitative and diagnostic (lab and radiology). The study site was the Child Welfare Clinic (CWC) located at the outpatients Maternal and Child Health (MCH) Department. Clinic days operate from Monday to Friday 8 AM to 4.00 PM. The main activities include registration and immunization of babies from zero days to five years of age, growth monitoring and nutritional advice. Main inhabitants of the community speak Luo as a local language. Their predominant economic activities include business, fishing, rice and sugarcane farming. Despite the above economic activities poverty levels in the region have remained high at 60% exceeding the national average level of 50% (World Bank, 2010).

### **3.3 Study Population**

The target population consisted breast-feeding mothers in formal employment with infants up to one year old. The women were categorized as mothers in formal employment if they worked outside their home for at least eight regular hours in a day (five days/week), had signed a contract with the employer and received a salary.

### **3.4 Inclusion and Exclusion Criteria**

#### **3.4.1. Inclusion Criteria**

- Breast-feeding and formally employed women with infants one year and below attending CWC clinic in JOOTRH.
- Breast-feeding and formally employed women aged 18-45 years who worked outside their home for eight or more hours in a day and had returned to work since last delivery.
- Breast-feeding women in formal employment willing to participate in the study.

#### **3.4.2 Exclusion Criteria**

- Breast-feeding women in formal employment not willing to participate in the study.
- Breast-feeding women in formal employment with multiple births.
- Breast-feeding women in formal employment who had not returned to work since last delivery.

### **3.5 Sampling Design**

The study utilized purposive sampling method to select participants and it was time bound. All eligible women who met the inclusion criteria and brought their infants to the Jaramogi Oginga Odinga Teaching and Referral Hospital (JOTRH) Child Welfare Clinic (CWC) for immunization in the months of May and June 2017 were selected for the study. To attain desired sample size, consecutively picked.

The first mother to bring her infant to the child welfare clinic and met the inclusion criteria was picked as respondent number one, the second client was respondent number two and so on in that sequence. Clients who had already participated in the study were not included in case they were met in subsequent visits to the clinic during the study period. A total of 401 mothers were enrolled into the study.

### **3.6 Sample Size Determination**

Records obtained from the study site indicate an average workload of 2000 mother infant pairs per month in the CWC. Out of the 2000 women who bring their children to the clinic, approximately 800 have infants below one year and majority are between 18-45 years. The average number of women in formal employment with infants aged one year and below in the clinic is estimated to be 200 per month hence sample size was obtained using the Fisher *et al.*, (1998) formula (target population below 10,000 based on the above statistics).

Where:

$$no = \frac{Z^2pq}{e^2}$$

no = the desired sample size

Z = the standard normal deviate at 95% confidence level (1.96)

P = the estimated proportion of the target population estimated to be exclusively breast-feeding.

$$q = 1-p$$

e = desired level of precision (0.05)

The Kenya national prevalence rate of 61% ( KDHS, 2014) was used to estimate the proportion of infants one year and below, receiving or received exclusive breast-feeding in women with formal employment seeking child welfare clinic services at JOOTRH.

$$\frac{(1.96)^2(0.61)(0.39)}{(0.05)^2}$$

$$= 365$$

The figure was adjusted upward by 10% to cater for possible recording errors and non-respondents. The resultant sample size was 401.

### **3.7 Data Collection Procedures**

A training of two research assistants with qualifications of Bachelor of Science Nursing degree was conducted for two days on 2<sup>nd</sup> and 3<sup>rd</sup> of April 2017. The assistants were guided on the purpose of the research then they were trained on interviewing and recording skills in order to establish a standard way of asking questions. Data was collected for a period of two months between May and June 2017.

Quantitative data collection was done by the researcher and the assistants from breast-feeding working mothers in CWC. The research assistants administered questionnaires to eligible subjects' questions were asked in accordance with the questionnaire. Responses were recorded as given by the mothers.

Qualitative data was collected through; focus group discussions (FGDs) and key informant interviews (KII). The researcher facilitated the discussion assisted by a

voice recorder and an observer. The purpose of the interview was to provide in-depth data which is not possible to get using a questionnaire and the interviewer can clarify and elaborate the purpose of the research and effectively convince the respondent about the importance of the research. Focus group participants were purposively recruited from eligible clients attending the CWC. They were not part of the calculated sample.

Two groups of five mothers each were selected and a neutral convenient place was identified under a tree in the hospitals recreational ground for the group interviews. Participants were informed of the intent to record the discussion then they were asked to sign an informed consent form. Participants were encouraged to maintain confidentiality and they were encouraged to feel free to share. Data collected was audiotaped. The researcher employed use of lead questions then the participants were given an opportunity to freely express their views. The interview lasted 45 minutes. Shy participants were encouraged to speak. The researcher took control of the discussion while at the same time allowing participants' freedom of expression.

Key informant interview (KII) was conducted between the researcher and the Nurse in-Charge of the CWC and the Nutritionist to provide in-depth information on the state of EBF and hospital strategies in place to support exclusive breastfeeding. The researcher explained the purpose of the interview prior to the interviewees signing an informed consent. The interview was conducted in the respective offices of the in – charges and each lasted approximately 30 minutes.

### **3.7.1 Data Collection Instruments**

The main instrument for data collection was a structured researcher administered questionnaire. The key indicators in the questionnaire were maternal employee demographic and socio-economic characteristics, maternal level of knowledge on

breast-feeding matters, breast-feeding patterns after return to work, support facilities available at work place in support of breast-feeding and constraints to EBF. Knowledge on EBF was assessed through a breast-feeding knowledge assessment tool adapted from (Alina *et al.*, 2010) and modified. The tool was divided into five domains consisting 30 items assessing scopes of knowledge on breast-feeding aspects such as duration of breast-feeding, awareness of benefits of EBF to mother and infant, colostrum, milk expression and risks of non-EBF. Each domain had a specified number of questions ranging from 3-6 with a categorical response of true, false or not sure. Scores were set such that for each correct response the respondent scored one point while a no and not sure response attracted a zero (0) score. Scores for each domain of breast-feeding knowledge and total score for each respondent were calculated and converted into percentage. Scores were also allocated for each variable tested. The negatively worded questions were re-coded such that no attracted a score of one point while yes and not sure were scored as zero. Scores were determined by the responses whereby a correct response was scored as 1 while a wrong or not sure answer attracted a zero score. Scores were entered for purposes of arriving at maternal index for analysis.

Codes were developed to ensure anonymity such that breast-feeding was coded as 01 and non- breast-feeding code 02. The questionnaires were numbered in that respondent number one was 001,002 in that order till 401.

### **3.7.2 Reliability**

The data collection instruments that was used in the study was adopted from (Alina, I, & Zaharah, 2010) then it was modified. To ascertain the reliability of the research instrument a reliability analysis was conducted and a Cronbach's alpha of 0.77 was obtained. The tools for data collection were pre-tested at the Kisumu County

Hospital using 10% of the calculated sample size to ascertain consistency of responses and ensure that the items in the instruments were clearly stated and contained the same meaning to all respondents before data collection commenced. Questions which were ambiguous were reviewed to be specific. The research assistants were involved in the pretesting stage.

### **3.7.3 Validity**

To ensure that the data obtained represents the variables of the study and that research measures what it is intended, a structured researcher administered questionnaire was used to collect data. Two research assistants were trained on interviewing and recording skills in order to establish a standard way of asking questions. Data from the interviews was triangulated with data from the focus group discussions and was reported verbatim.

### **3.8 Data Analysis**

Data was cleaned, coded and entered into the Statistical Package for Social Sciences, (SPSS) for analysis. Descriptive statistics was used to present participant socio-demographic characteristics, knowledge levels, work practices and constraints to EBF by use of frequencies and percentages. Chi square test was used to determine association between exclusive breast-feeding and the study variables of socio-demographics, knowledge, work practices and constraints. Bivariate regression analysis was done to determine if there was relationship between EBF and socio-demographic and knowledge variables. Variables that had a  $p < 0.25$  were put in the final multivariate logistic regression to control for confounders. Associations were reported by use of Odds Ratios with their respective 95% Confidence Intervals (CI). Statistical significance was considered if  $p < 0.05$ . Knowledge for each question was

assessed based on the sum of correct answers over the total correct choices they should have to answer. After getting the knowledge level for each question, the overall knowledge was calculated from the cumulative percentage of all questions in the domain for all respondents. The mean was calculated for each and then for all questions. Finally, those with scores above the mean were categorized as having higher knowledge. To determine knowledge level among the participants, a three point numeric knowledge rating skill (Merga & Alemayehu, 2015) was used whereby: 1. Working skill or knowledge, 2. Advanced skill or knowledge and 3. High degree skill or knowledge hence participants knowledge level was categorized as 1. Very knowledgeable 2. Quite knowledgeable 3. Inadequate knowledge. Qualitative data recorded from FGDs and in-depth interviews was transcribed then it was coded. Common themes were identified, inferences made from each theme and conclusion drawn then triangulated with the data from the questionnaire.

### **3.9 Ethical Consideration**

Authority to carry out the research was sought from Masinde Muliro University (MMUST) Institutional Ethics and Review Committee (IREC), Jaramogi Oginga Odinga Teaching and Referral Hospital (ERC) and the National Commission for Science and Technology (NACOSTI). Consent was obtained from the medical superintendent of Kisumu County Hospital before pretesting of the questionnaire was done. Participants were informed on the nature and purpose of the study and they were allowed to ask questions for clarification. Benefits and risks of the study were explained. The subjects signed an informed consent and were informed of their right to withdraw from the study whenever they wished to as participation was on voluntary basis.

Measures to ensure confidentiality and anonymity were implemented as no names were used while filling in of questionnaires. Codes were used for numbering which was entered on the questionnaire. To mitigate infliction of psychological harm on subjects, questions were clearly stated.

## **CHAPTER FOUR**

### **RESULTS**

#### **4.0 Overview**

The chapter presents results from the analysis of data on maternal socio-demographics, knowledge on the tested domains of breast-feeding, work place support and constraints to EBF.

#### **4.1 Demographic characteristics of the respondents**

A total of 401 breast-feeding mothers in formal employment participated in the study. Out of the 401 questionnaires, 391 were complete for analysis yielding a response rate of 98%. Their mean age (in years) was 29.4 (SD 4.3) with slightly more than half (55%) aged between 20-29 years. Majority (73.1%) were married. Almost all the respondents 94.1% had attained college level of education. Employment status was determined by occupation then it was coded according to where they were employed. Private company was the leading employer (36.3%). Most of the respondents (30.2%) had a salary scale of between Kshs. 25000-35000. Education level  $p$ - (0.049) and parity ( $p$ -0.014) were significantly associated with the dependent variable EBF as detailed in Table 4.1.

**Table 4.1: Maternal Characteristics (n= 391)**

<b>Characteristic</b>	<b>N= 391 n(%)</b>	<b>EBF n (%)</b>	<b>Non-EBF n (%)</b>	<b>p value</b>
<b>Mothers Age (years)</b>				0.29
20-24	45(11.5)	25(55.6)	20(44.4)	
25-29	170(43.5)	79(46.5)	91(53.5)	
30-34	118(30.2)	66(55.9)	52(44.1)	
Above 35	58(14.8)	26(44.8)	32(55.2)	
<b>Marital Status</b>				0.98
Single	74(18.9)	37(50.0)	37(50.0)	
Married/Cohabiting	286(73.2)	144(50.3)	142(49.7)	
Separated/Widow	31(7.9)	15(48.4)	16(51.6)	
<b>Education level</b>				<b>0.049</b>
Primary	2(0.5)	2(100.0)	0(0.0)	
Secondary	21(5.4)	6(28.6)	15(71.4)	
Tertiary	368(94.1)	188(51.1)	180(48.9)	
<b>Employer</b>				0.66
Public Service	113(28.9)	60(53.1)	53(46.9)	
TSC	60(15.4)	30(50.0)	30(50.0)	
Private company	142(36.3)	68(47.9)	74(52.1)	
NGO	55(14.1)	30(54.6)	25(45.4)	
Others	21(5.4)	8(38.1)	13(61.9)	
<b>Salary (KES)</b>				0.38
< 25,000	144(36.8)	68(47.2)	76(52.7)	
25,000 +	247(63.2)	128(51.8)	119(48.1)	
<b>Religion</b>				
Christian	376(96.2)	188(50)	188(50.0)	
Muslim	15(3.84)	8(53.3)	7(46.6)	
<b>Parity</b>				<b>0.014</b>
1	123(31.5)	75(60.9)	48(39.0)	
2	135(34.5)	60(44.4)	75(55.6)	
3and more	133(34.1)	61(45.7)	72(54.1)	
<b>Child Age (months)</b>				0.25
≤ 6	204(52.2)	108(52.9)	96(47.1)	
> 6	187(47.8)	88(47.06)	99(52.9)	
<b>Place of Delivery</b>				0.08
Public Hospital	238(60.9)	124(52.1)	114(47.9)	
Private Hospital	145(37.1)	71(48.9)	74(51.0)	
Home	8(2.1)	1(12.5)	7(87.5)	

## 4.2 Exclusive breast-feeding rate

To determine the exclusive breast-feeding (EBF) rate, mothers were asked whether they had given their infants any other feeds besides breast milk while they were below 6 months and reasons for introduction of the feeds. Half (50.1%) of participants practiced EBF. Of those that did not EBF, majority (27.7%) gave formula milk alongside breast milk. The main reasons cited for non-EBF were return to work (29.4%) and lack of enough breast milk (14.3%) as illustrated in Table 4.2.

**Table 4.2 Exclusive breastfeeding rate**

<b>B/feeding Characteristic</b>	<b>n (391)</b>	<b>(%)</b>
<b>Breast-feeding practices</b>		
Exclusive breast-feeding	196	50.1
Non-exclusive breast-feeding	195	49.9
<b>Feeds given alongside breast-milk</b>		
Formula milk	109	27.7
Water	23	5.9
Porridge	25	6.4
Unmodified cow's milk	35	9
Others	3	0.8
<b>Reason for non-EBF</b>		
Baby not getting enough from breast milk	56	14.3
Advice by family members	11	2.8
Mothers illness	5	1.3
Return to work	115	29.4
Others eg baby refusal	8	2
<b>Total</b>	<b>195</b>	

### 4.3 Breast-feeding Information

Majority of the mothers (90.3%) reported to have received breast-feeding information. Most (79.8%) got the information from a health care worker. The rest (7.2%) got information from friends and relatives while (1.5%) from the media. A further (1.8%) got breast-feeding information from other sources such as school and church. For those counseled by a health care worker; most (41.7%) were counseled during the antenatal period. See table 4.3

**Table 4.3 Breast-feeding information**

<b>Knowledge aspect</b>	<b>N=391</b>			<b>p value</b>
	<b>n (%)</b>	<b>EBF n (%)</b>	<b>Non-EBF n (%)</b>	
<b>Received breast-feeding information</b>				0.505
YES	353(90.3)	175(89.3)	178(91.3)	
NO	38(9.7)	21(10.7)	17(8.7)	
<b>Source of information</b>				0.123
Health Worker	312(79.8)	153(49.0)	159(50.1)	
Friends/Relatives	28(7.2)	16(57.1)	12(42.9)	
Media	6(1.5)	6(100.0)	0(0.0)	
Others	7(1.8)	3(42.9)	4(57.1)	

### 4.4 Maternal Knowledge on Breast-feeding

From the findings, participants were generally knowledgeable on breastfeeding matters. Overall knowledge level was high with a mean score of 73% and median of 73% on all domains tested. About half of the respondents (49.9%) scored between 75-100% on all aspects tested while 39.9% scored between 50-74%. Only (6.6%) scored below 50%.

Higher scores were an indication of higher knowledge on the tested item. Scores ranged from 0-30.

#### 4.4.1 Knowledge on duration of breast-feeding

Knowledge on this domain was generally very high. Most 96.7% of the respondents scored above 50% on duration of breast-feeding. Similar findings were noted in the FGD where almost all the mothers were able to correctly state the recommended period of EBF and when to introduce complimentary feeds. *“We were taught in the clinic that a baby should be given only breast milk without even water for six months”.* (FGD mothers). Three of the areas tested demonstrated significant association with the dependent variable. Knowledge on duration of EBF (OR: 3; 95% CI 1.6-5.4;  $p < 0.001$ ), babies below six months can be given water to quench their thirst (OR: 0.5; CI 0.2-0.8;  $p 0.02$ ), recommended period for introduction of complementary feeds (OR: 5; CI 1.7-15;  $p 0.001$ ) as illustrated in Table 4.4. One question was negatively worded i.e babies below six months can be given water to quench their thirst. Majority in both the EBF (88.3%) and non-EBF (80%) group were able to answer correctly yielding an OR of 0.5. The negative correlation could be due to a higher percentage (21%) of the non-EBF group that didn't answer correctly.

**Table 4.4 Knowledge on breast-feeding duration**

EBF Knowledge characteristic	Response	N= 391		OR	95% CI	p value
		EBFn (%)	Non-EBFn(%)			
Breast-feeding should be initiated within the first hour of birth	YES	191(97.4)	185(94.9)	2	.6-6.1	0.16
	NO	5(2.6)	10(5.1)			
Breast milk alone can sustain an infant from birth to 6 months	YES	178(94.9)	149(76.4)	3	1.6-5.4	<0.01
	NO	18(9.2)	46(23.6)			
Complementary feeds are introduced at six months	YES	192(98.0)	176(90.3)	5	1.7-15	0.01
	NO	4(2.0)	19(9.7)			
Breastfeeding should be on demand	YES	180(91.8)	177(90.8)	1.1	0.5-2.3	0.71
	NO	61(31.1)	54(27.7)			
Breast feeding should be continued up to 2 years	YES	135(68.9)	141(72.3)	0.8	.5-1.3	0.46
	NO	61(31.1)	54(27.7)			
Baby below six months can be given water to quench their thirst	YES	23(11.7)	40(20.5)	0.5	0.2-0.8	0.02
	NO	173(88.3)	155(79.9)			

#### 4.4.2 Knowledge on benefits of exclusive breast-feeding to infant

Majority (94.4%) of the respondents exhibited high knowledge level on this domain. Higher scores (93.6%) were noted on the aspect of EBF enhances bonding between mother and baby. In the FGD participants were able to state at least two benefits of EBF to the infant. *“Babies who are given breast milk only for six months are usually stronger and they perform better in school as compared to those who were introduced to other feeds before six months”*. Out of the six items tested four demonstrated significant association with EBF. These are: EBF reduces risk of respiratory diseases in children (OR: 2; 95% CI 1.2-3.0; p=0.002), increases child’s intelligence (OR:2;95% CI 1.2-3.0; p<0.001); reduces risk of diarrheal diseases (OR:4.6; 95% CI 2.6-8.1; p<0.001) and enhancement of mother child bonding

(OR:4; 95%CI 1.6-1.8; p- 0.002). These could be explained by the fact most of the respondents in the EBF category were knowledgeable as compared to the non- EBF group. The rest though had high scores did not have any significant association with EBF as shown in Table 4.5

**Table 4.5 Knowledge on benefits of exclusive breast-feeding to infants**

Knowledge characteristic	Response	N=391		95% CI	p value
		EBF n (%)	Non-EBF n (%)		
Reduces risk of respiratory diseases	YES	146(74.5)	116(59.5)	1.2-3.0	<b>0.02</b>
	NO	50(25.5)	262(67.0)		
Increases child intelligence	YES	151(77.0)	97(49.7)	2.1-5.2	<b>&lt;0.01</b>
	NO	45(23.0)	98(50.3)		
Reduces risk of diarrhoeal diseases	YES	178(90.3)	133(62.2)	2.6-8.1	<b>&lt;0.01</b>
	NO	8(9.2)	62(31.8)		
Enhances mother and child bonding	YES	191(97.4)	175(89.7)	1.6-1.8	<b>0.02</b>
	NO	5(2.6)	20(6.4)		
Prevents malnutrition	YES	177(90.3)	165(84.6)	0.9-3.1	0.09
	NO	19(9.7)	30(15.4)		
Promotes good sleep in infants	YES	183(93.4)	176(90.3)	0.7-3.1	0.27
	NO	13(6.6)	19(9.7)		

#### 4.4.3 Knowledge on benefits of exclusive breast-feeding to mother

Table 4.6 shows responses on knowledge of EBF to the mother. From the findings participants demonstrated average knowledge level on the six items in this domain. Mean score of all variables tested (62.3%). Four out of the six tested aspects were significantly associated with EBF as follows: EBF prevents pregnancy OR: 1.5; 95% CI 1.0-2.3; p value 0.03, EBF stimulates faster uterine contraction OR: 1.9; 95% CI 1.3-2.9, prevents breast engorgement OR: 2.4; 95% CI 1.3-2.5; p-value 0.03 and EBF reduces absenteeism from work OR: 3.8; 95% CI 2.4-5.9; p-value <0.01. Equally all participants in the FGD agreed that EBF reduces the cost of purchasing other feeds for the baby. Lower scores were noted on the aspect of EBF enhancing achievement of pre-pregnancy weight faster. Data from FGD shows that only 2 out

of 6 participants knew that EBF enhances faster weight loss. *“I have heard that exclusive breast-feeding can help in reducing weight after delivery” FGD mother number 3, and 6.*

**Table 4.6 Benefits of exclusive breast-feeding to the mother**

Knowledge characteristic		N=391		OR	CI	p-value
		EBF n (%)	Non-EBF n(%)			
Prevents pregnancy	YES	124(63.3)	102(52.3)	1.5	1.0-2.3	<b>0.03</b>
	NO	72(36.7)	93(47.7)			
Stimulates faster uterine contraction	YES	71(36.2)	57(29.2)	1.9	1.3-2.9	<b>0.01</b>
	NO	125(63.8)	138(68.2)			
Enhances post-delivery weight loss	YES	94(48.0)	62(31.8)	1.3	0.9-2.1	0.14
	NO	102(52.0)	133(68.2)			
Prevents breast engorgement	YES	179(91.3)	158(81.0)	2.4	1.3-4.5	<b>0.03</b>
	NO	17(8.7)	37(19.0)			
Reduces absenteeism from work	YES	157(80.1)	100(51.3)	3.8	2.4-5.9	< <b>0.01</b>
	NO	39(19.9)	95(48.7)			
It is cost effective	YES	179(91.3)	178(91.3)	1	0.4-2.0	0.99
	NO	17(8.7)	17(8.7)			

#### 4.4.4 Knowledge on milk expression

Knowledge on milk expression was tested on five items as shown in table 4.7. All except one of the tested items were negatively worded i.e expressed breast milk can be stored in the fridge for over 48 hours, freshly expressed can be mixed with previously expressed milk, breast milk can be boiled and left-over expressed milk can be re-used. Respondents who selected no on the negatively worded questions got a score of one while those who selected yes on not sure scored zero on that item. Majority of the respondents were conversant with knowledge aspects on milk expression with variations noted in the EBF and non EBF groups in different aspects for example on item one, more (94.3%) of the EBF category were aware that babies can be fed on EBM while the mother is away while for items three four and five more of the non-EBF gave correct responses. Four out of the five items tested demonstrated a significant relationship with EBF as follows; Babies can be fed on

EBM while mother is away OR: 5.1; CI 2.1-11.8; p-value <0.01, EBM can be stored in the fridge for over 48 hours OR: 2.2;95% CI 1.4-3.4;p-value <0.01, left over EBM can be mixed with fresh EBM OR:5;95%CI1.9-17;p-value < 0.01 and EBM can be boiled OR1.7; 95% CI 1.0-3.0 p-value 0.03. Data from FGD showed that most participants were not conversant with the correct storage of expressed milk. Most of them felt EBM can be safely stored in the fridge for more than 3 days without freezing which is contrary to the recommended period of storage of 24-48 hours. ***“A mother who is going to work can express milk and keep it in the fridge even for one-week FGD employed mother No2”***. Almost all (90.3%) of the respondents were aware that the infant could be fed with EBM while the mother is away as shown in Table 4.7

**Table 4.7 Knowledge on milk expression**

Knowledge characteristic	Response	N=391		OR	CI	p-value
		EBF n(%)	Non-EBF n(%)			
Babies can be fed on expressed breast milk while the mother is away	YES	189(94.3)	164(84.1)	5.1	2.1-11.8	<b>&lt;0.01</b>
	NO	7(3.6)	31(15.9)			
Expressed breast-milk can be stored in the fridge (4-8)°C for over 48 hours	YES	92(46.9)	55(28.2)	2.2	1.4-3.4	<b>&lt;0.01</b>
	NO	104(53.1)	140(71.8)			
Expressed breast-milk can be mixed with previously expressed milk	YES	21(10.7)	4(2.1)	5	1.9-17	<b>&lt;0.01</b>
	NO	175(89.3)	191(97.1)			
Expressed breast-milk can be boiled.	YES	41(20.9)	25(12.8)	1.7	1.0-3.0	<b>0.03</b>
	NO	155(79.1)	170(87.2)			
Left over expressed milk can be reused	YES	22(11.2)	13(6.7)	1.7	0.8-3.6	0.11
	NO	174(88.8)	182(93.3)			

#### 4.4.5 Knowledge on risks associated with failure to exclusively breast-feed

Mean score on this domain was (70.6%). Findings from FGDs indicated higher knowledge on this domain. Most participants knew at least 3 out of four risks of failure to EBF. *“Babies who are not exclusively breast-fed are easily attacked by diseases such as cough because their bodies are not strong enough to fight the diseases FGD mothers 1,3and 5”*. *“We were taught that failure to exclusively breast-feed can lead to transmission of HIV from mother to baby for mothers who are HIV positive FGD mother 1 and 4”*. All the tested items demonstrated significant association with the dependent variable EBF. Non-EBF can lead to malnutrition in children; (OR:2.2; 95% CI 1.1-4.2; p-0.002), increases risk of MTCT of HIV (OR: 2; 95% CI 1.3-2.9, p-0.001), Increases risk of diarrheal diseases, (OR: 6.8; 95%CI 3.6-13; p<0.001). In all the tested items more of the mothers in the EBF category knew the risks of non-EBF and knowledge of risks was significantly associated with higher odds of EBF as illustrated in Table 4.8.

**Table 4.8 Risks of failure to exclusively breast-feed**

<b>N=391</b>						
<b>Knowledge characteristic</b>	<b>Response</b>	<b>EBFn (%)</b>	<b>Non-EBF n(%)</b>	<b>OR</b>	<b>CI</b>	<b>p-value</b>
Can lead to child malnutrition	YES	181(92.3)	165(84.6)	2.2	1.1-4.2	<b>0.02</b>
	NO	15(7.7)	30(15.4)			
Lead to mother to child transmission of HIV	YES	100(51.0)	67(34.4)	2	1.3-2.9	<b>0.01</b>
	NO	96(49.0)	128(65.5)			
Lead to increased risk of diarrhoeal diseases	YES	183(93.4)	131(67.2)	6.8	3.6-13	<b>&lt;0.01</b>
	NO	13(6.6)	64(32.8)			

#### 4.4.6 Knowledge on Colostrum

Participants were well informed on knowledge aspects of colostrum. Majority knew that colostrum should be fed to the baby as opposed to discarding it on both the EBF (88.3%) and non-EBF (87%) category. Similar responses were noted in the FGD where mothers indicated that colostrum is the first milk that a mother produces at birth and should be fed to the infant since it offers protective measures. *“Colostrum is the first milk that the mother produces after and it’s rich in nutrients which make the baby strong”*. The percentage of mothers that practiced EBF was almost equal to those that did not EBF in all tested items hence there was no variable with a significant p-value as shown in Table 4.9.

**Table 4.9 Knowledge on Colostrum’s**

Knowledge characteristic	Response	N=391		OR	CI	p-value
		EBF n (%)	Non-EBF n(%)			
The first yellowish milk should be fed to the baby	YES	173(88.3)	167(85.6)	1.2	0.6-2.2	0.44
	NO	23(11.7)	28(14.4)			
Colostrum should be discarded	YES	18(9.2)	24(12.3)	0.7	0.3-1.3	0.32
	NO	178(90.8)	171(87.7)			
Colostrum causes constipation in babies	YES	27(13.8)	25(12.5)	1	0.6-1.9	0.78
	NO	169(86.2)	170(87.2)			
Breast milk should be the first feed given to babies at birth	YES	188(95.9)	185(94.9)	1.2	0.4-3.2	0.62
	NO	8(4.1)	10(5.1)			

#### 4.4.7 Level of Knowledge on breast-feeding aspects

Overall participants were quite knowledgeable on all the domains tested. The total knowledge score for all participants revealed a significant association with EBF **p-<0.001** with the EBF category of respondents being very knowledgeable (61.2%) as compared to (38.5%) in the non-EBF category. Knowledge level of respondents in

four out of the six domains tested, had significant association with EBF as follows: level of knowledge on duration of breast-feeding (p=0.004), benefits of EBF to the mother (p< 0.001), benefits of EBF to the infant <0.001), risks of failure to EBF (p< 0.001) as illustrated in Table 4.10

**Table 4.10 Level of knowledge**

Knowledge domain	Total	N=391		p- value
		EBF n(%)	Non-EBF n(%)	
<b>Duration of breastfeeding</b>				<b>0.004</b>
Inadequate knowledge	13(3.3)	1(0.5)	12(6.2)	
Quite knowledgeable	89(22.8)	41(20.9)	48(24.6)	
Very Knowledgeable	289(73.9)	154(78.6)	135(69.2)	
<b>Colostrum knowledge</b>				0.193
Inadequate knowledge	34(8.7)	12(6.1)	22(11.3)	
Quite knowledgeable	67(17.1)	35(17.9)	32(16.4)	
Very Knowledgeable	290(74.2)	149(76)	141(72.3)	
<b>Benefits of EBF to the mother</b>				<b>&lt;0.001</b>
Inadequate knowledge	83(21.2)	17(8.7)	66(33.8)	
Quite knowledgeable	171(43.7)	94(48)	77(39.5)	
Very Knowledgeable	137(35)	85(43.4)	52(26.7)	
<b>Benefits of EBF to infant</b>				<b>&lt;0.001</b>
Inadequate knowledge	21(5.4)	1(0.5)	20(10.3)	
Quite knowledgeable	101(25.8)	39(19.9)	62(31.8)	
Very Knowledgeable	269(68.8)	156(79.6)	113(57.9)	
<b>Expressed breast milk</b>				0.187
Inadequate knowledge	110((28.1)	47(24)	63(32.3)	
Quite knowledgeable	100(25.6)	53(27)	47(24.1)	
Very Knowledgeable	181(46.3)	97(49)	85(43.6)	
<b>Risk of failure to breast-feed exclusively</b>				<b>&lt;0.001</b>
Inadequate knowledge	84(21.5)	16(8.2)	68(34.9)	
Quite knowledgeable	159(40.7)	89(45.4)	70(35.9)	
Very Knowledgeable	148(37.9)	91(46.4)	57(29.2)	
<b>Total knowledge score</b>				<b>&lt;0.001</b>
Inadequate knowledge	26(6.6)	1(0.5)	25(12.8)	
Quite knowledgeable	170(43.5)	75(38.3)	95(48.7)	
Very Knowledgeable	195(49.9)	120(61.2)	75(38.5)	

#### **4.5 Breast-feeding support at work**

Participants were given a predetermined list of ten (10) workplace breast-feeding support facilities and were required to select yes if the particular facility was available and vice versa. Scores were allocated for each response such that a yes meant the facility was available and vice versa. Generally, the work place support was very low mean 2.95, SD 2.036. Maternity leave emerged as most available form of support. Almost all (90.8%) reported to have been granted leave of three months. All participants in the FGD reported to have had maternity leave of varied periods depending on the employer. *“When one gives birth, the government grants a maternity leave of 90 days plus annual leave of 30 working days (public service employed FGD mother)”*. Despite above leave period further reports from FGD indicate that women in employment are not content with the duration and they prefer at least six months of maternity leave to enable them EBF for six months without interruption. *“The leave period provided is not enough as one has to report back to work before the baby is six months old and once one has resumed work milk production reduces making it difficult to EBF”*. Some mothers in private sector reported to have been granted maternity leave of either three or below three months. *“The company that I work for gives us maternity leave of only two months. At the end of the two months, one is expected back on duty despite the baby being too small” (private company employed FGD mother)*. Other main forms of support identified include: Support from co-workers (59.3%), flexi and shorter working hours (53.5%) and breast-feeding breaks. Only (7.16%) respondents reported availability of a designated breast-feeding room.

A bivariate analysis was done to assess the association between workplace breast-feeding support EBF. All except two variables tested revealed a statistically significant association with the EBF as illustrated in Table 4.5.

**Table 4.5 Breast-feeding support at work place**

<b>Form of support</b>	<b>N=391 n(%)</b>	<b>EBF n(%)</b>	<b>Non-EBF n(%)</b>	<b>OR</b>	<b>CI</b>	<b>p- value</b>
<b>Maternity leave</b>				0.8	0.4-1.5	0.47
Below 3 months	36(9.2)	16(8.2)	20(10.3)			
Above 3 months	355(90.8)	180(91.8)	175(89.7)			
<b>On-site day care</b>				1.3	0.7-2.4	0.36
Yes	46(11.8)	26(13.3)	20(10.3)			
No	345(88.2)	170(86.7)	175(89.7)			
<b>Designated BF room</b>				<b>2.6</b>	<b>1.1-6.1</b>	<b>0.02</b>
Yes	28(7.2)	20(10.2)	8(4.1)			
No	363(92.8)	176(48.5)	187(95.9)			
<b>Refrigerator to store expressed milk</b>				3	1.8-6.7	<b>&lt;0.01</b>
Yes	52(13.3)	39(19.9)	13(6.7)			
No	339(86.7)	157(80.1)	182(93.3)			
<b>One is allowed to BF at work</b>				<b>2.6</b>	<b>1.6-4.2</b>	<b>&lt;0.01</b>
Yes	99(25.3)	67(34.2)	32(16.4)			
No	292(74.7)	129(65.8)	163(83.6)			
<b>BF policy at workplace</b>				1.6	0.9-2.7	0.07
Yes	70(17.9)	42(21.4)	28(14.4)			
No	321(82.1)	154(78.6)	167(85.6)			
<b>Supportive supervisor</b>				<b>5</b>	<b>3.2-8.0</b>	<b>&lt;0.01</b>
Yes	138(35.3)	103(52.6)	35(17.9)			
No	253(64.7)	93(47.4)	160(82.1)			
<b>Flexible work schedules</b>				<b>1.7</b>	<b>1.2-2.6</b>	<b>0.07</b>
Yes	209(53.4)	118(60.2)	91(46.7)			
No	182(46.6)	78(39.8)	104(53.3)			
<b>Breastfeeding breaks</b>				4	2.6-6.5	<b>&lt;0.01</b>
Yes	134(34.3)	97(49.5)	37(19.0)			
No	257(65.7)	99(50.5)	158(81.0)			
<b>Co-worker support</b>				2	1.4-3.0	<b>0.01</b>
Yes	232(59.3)	133(67.9)	99(50.8)			
No	159(40.7)	63(32.1)	96(49.2)			

#### **4.5.1 Breast-feeding support facilities per employer**

Generally, most (90.8) of the respondents were granted maternity leave of more than three months. From the results, most of the respondents who agreed that their employer allowed them flexible working hours were those employed by NGOs (60%), GOK (57.5%), and TSC (56.7%). Besides flexi hours, TSC employees were allowed to breast-feed at work place. Equally from the FGDs, participants who were teachers and had been employed by TSC reported that they are allowed to breast-feed their babies at work during break time. *“Though there is no assigned room for breast-feeding, we are allowed to breastfeed our babies during break time. The baby is normally brought by the caregiver and after feeding they go back” TSC employed FGD mother.* Four of the areas assessed revealed a significant association between the type of employer and availability of work place support. Support from co-workers (**p-0.025**), chance to breast-feed at work (**p<0.001**), presence of milk expression rooms (**p-0.003**) and availability of breast-feeding policies (**p-0.013**) as detailed in Table 4.5

**Table 4.5.1 Breast-feeding support per employer**

Intervention	Total N=391 n(%)	Employer n (%)					p value
		GOK	TSC	PRIVATE	NGO	OTHERS	
<b>Maternity leave</b>							<b>0.04</b>
< 3 months	36(9.2)	3(2.7)	2(3.3)	19(13.4)	9(16.4)	3(14.3)	
> 3 months	355(90.8)	110(97.3)	58(97.3)	123(86.6)	46(83.6)	18(85.7)	
<b>Day care</b>							0.27
YES	46(11.8)	10(8.8)	12(20)	15(10.6)	6(11)	3(14.3)	
NO	345(88.2)	103(91.2)	48(80)	127(89.4)	49(89)	18(85.7)	
<b>B/feeding room</b>							0.25
Yes	28(7.2)	4(3.5)	4(6.7)	12(8.5)	7(12.7)	1(4.8)	
No	363(92.8)	109(96.5)	56(93.3)	130(91.5)	48(87.3)	20(95.2)	
<b>Breaks</b>							0.55
Yes	134(34.3)	36(32)	18(30)	48(34)	24(17.9)	8(38)	
No	257(65.7)	77(68)	42(70)	94(66)	31(12.1)	13(62)	
<b>Supportive supervisor</b>							0.54
Yes	138(35.3)	37(32.7)	26(43)	52(36.6)	16(29)	7(33.3)	
No	253(64.7)	76(67.3)	34(57)	90(63.4)	39(71)	14(66.7)	
<b>Co-worker support</b>							<b>0.03</b>
Yes	232(59.3)	57(50.4)	43(71.7)	82(57.7)	39(71)	11(52.4)	
No	159(40.7)	56(49.6)	17(28.3)	60(42.3)	16(29)	10(47.6)	
<b>BF at work</b>							<b>&lt;0.01</b>
Yes	99(25.3)	17(15)	28(46.7)	34(24.0)	15(27.3)	5(23.8)	
No	292(74.7)	96(85)	32(53.3)	108(76.0)	40(15.2)	16(76.2)	
<b>Expression rooms</b>							0.18
Yes	143(36.6)	34(30.0)	21(35)	59(41.5)	24(43.6)	5(23.8)	
No	248(63.4)	79(70.0)	39(65)	83(58.5)	31(12.5)	16(76.2)	
<b>Fridge</b>							<b>0.03</b>
Yes	52(13.3)	25(22.1)	3(5.0)	12(8.5)	7(12.7)	5(23.8)	
No	339(86.7)	88(77.9)	57(95.0)	130(91.5)	48(87.3)	16(76.2)	
<b>Flexi hours</b>							0.16
Yes	209(53.5)	65(57.5)	34(56.7)	64(43.1)	33(60)	13(61.9)	
No	182(46.5)	48(42.5)	26(43.3)	78(54.9)	22(40.0)	8(38.1)	
<b>BF Policies</b>							<b>0.01</b>
Yes	70(17.9)	30(26.5)	9(15)	15(10.6)	13(23.6)	3(14.3)	
No	321(82.1)	83(75.5)	51(85)	127(89.4)	42(76.4)	21(85.7)	

#### 4.6 Constraints to EBF

Participants were given a predetermined list of constraints to select from. They were required to either choose yes or no where yes meant they experienced the particular constraint. Majority (90%) reported long working hours as the main constraint. In conformity is information collected from KII. The key informant reported that most working mothers don't EBF because they are away from their babies most of the time. *"We advise all mothers to exclusively breast-feed for six months but most mothers in employment complain that it's difficult to continue exclusively breast-feeding once they resume work from maternity leave since they spend long hours at work and that lowers milk production"* (key informant). Similar findings were noted in the FGD where some mothers reported to be working away from their young infants for long hours up to over eight hours in a day. *"I leave home for work at 6.30 am and will be back at around 7.00 pm. By the time I get home the baby has no interest in me and sometimes even refuses to breast-feed and because of not breast-feeding for many hours, milk disappears hence I have to introduce other foods like porridge"* (FGD mother). Other major constraints to EBF identified include; lack of time due to competing tasks (86.45%), short maternity leave (82.35%) and mothers illness (73.2%). Baby crying a lot (43.7%) and perceived lack of enough milk (49.4%) were the least mentioned constraints. Lack of enough milk ( $p < 0.001$ ), baby refusal to breast-feed ( $p = 0.01$ ) and mothers illness ( $p = 0.001$ ) were significantly associated with EBF such that majority of the mothers that experienced the constraints fell in the non-EBF category. There were no major differences noted between the EBF and non-EBF groups in the rest of the variables as shown in Table 4.6

**Table 4.6 Constraints to exclusive breast-feeding**

<b>Constraint</b>	<b>N=391 n(%)</b>	<b>EBF n(%)</b>	<b>non-EBF n(%)</b>	<b>p-value</b>
<b>Long working hours</b>				0.08
Yes	355(90.8)	182(93.3)	173(88.3)	
No	36(9.2)	13(6.7)	23(11.7)	
<b>Lack of enough milk</b>				<b>&lt;0.001</b>
Yes	193(49.4)	77(39.5)	116(59.2)	
No	198(50.6)	118(60.5)	80(40.8)	
<b>Painful breasts</b>				0.77
Yes	265(67.8)	124(63.6)	141(71.9)	
No	126(32.2)	71(36.4)	55(28.1)	
<b>Baby refusal to breast feed</b>				<b>0.01</b>
Yes	201(51.4)	87(44.6)	114(58.2)	
No	190(48.6)	108(55.4)	82(41.8)	
<b>Mothers illness</b>				<b>0.01</b>
Yes	286(73.1)	137(67.2)	155(79.1)	
No	105(26.9)	64(32.8)	41(20.9)	
<b>Pressure from family to stop EBF</b>				0.87
Yes	23(59.1)	116(59.5)	115(58.7)	
No	160(40.9)	79(40.5)	81(41.3)	
<b>Short maternity leave</b>				0.87
Yes	322(82.4)	160(82.1)	162(82.7)	
No	69(17.6)	35(17.9)	34(17.3)	
<b>Baby cries a lot</b>				0.23
Yes	171(43.7)	79(40.5)	92(46.9)	
No	220(56.3)	116(59.5)	104(53.1)	
<b>Lack of time</b>				0.82
Yes	338(86.4)	170(86.7)	168(86.2)	
No	53(13.6)	26(13.3)	27(13.8)	
<b>Difficulties in expressing breast milk</b>				0.05
Yes	274(70.1)	132(67.7)	142(72.4)	
No	117(29.9)	63(32.3)	54(27.6)	

#### **4.7 Predictors of Exclusive Breast-feeding**

Variables that had a  $p < 0.25$  were put in the final multivariate logistic regression. Education, parity, child age, place of delivery, benefit to mother and knowledge on risks were fit in the final multivariate model. From the findings; mothers who had tertiary education were more likely to breastfeed compared to mothers who had secondary education (aOR = 2.50, 95%CI [0.86-7.28],  $p = 0.92$ ). Mothers who delivered at public hospitals (aOR=12.48, 95%CI [1.46-106.74],  $p = 0.021$ ) and private hospitals (aOR =1.04, 95%CI [1.04-77.87],  $p=0.046$ ) were more likely to EBF compared to mothers who delivered at home. For mothers who knew the benefits of EBF to them, those who were quite knowledgeable (aOR=3.22, 95% CI [1.63-6.35],  $p=0.001$ ) and very knowledgeable (aOR=4.1, 95% CI [2.07-8.12],  $p<0.01$ ) were more likely to EBF compared to those who had inadequate knowledge. For knowledge on risks of non-EBF, those who were quite knowledgeable (aOR=4.10, 95% CI [2.07-8.12],  $p<0.001$ ) and very knowledgeable (aOR=3.82, 95% CI [1.84-7.97],  $p<0.001$ ) were more likely to EBF compared to those who had inadequate knowledge.

**Table 4.14 Logistic regression model of the significant factors associated with exclusive breast-feeding**

Characteristic	uOR	95%CI	p value	aOR	95%CI	p value
<b>Mothers Age (years)</b>			0.2971			
20-24	1.54	0.70-3.37	0.281			
25-29	1.07	0.59-1.94	0.828			
30-34	1.56	0.83-2.94	0.167			
35-44	<i>ref.</i>					
<b>Marital Status</b>			0.9784			
Single	1.07	0.46-2.47	0.88			
Married/Cohabiting	1.08	0.52-2.27	0.836			
Separated/Widowed	<i>ref.</i>					
<b>Education</b>			<b>0.0415</b>			
Primary	-			-		
Secondary	<i>ref.</i>			<i>ref.</i>		
Tertiary	2.61	0.99-6.88	0.052	2.5	0.86-7.28	0.92
<b>Occupation</b>			0.6731			
Civil Servant	1.84	0.71-4.78	0.211			
Education	1.63	0.59-4.49	0.349			
Private company	1.49	0.58-3.82	0.403			
NGO	1.95	0.70-5.45	0.203			
Others	<i>ref.</i>					
<b>Salary (KES)</b>			0.3802			
< 25,000	<i>ref.</i>					
25,000 +	1.2	0.80-1.81				
<b>Parity</b>			<b>0.0139</b>			
1	1.95	1.19-3.21	<b>0.008</b>	1.52	0.87-2.66	0.141
2	<i>ref.</i>			<i>ref.</i>		
3	1.06	0.65-1.71	0.815	1.13	0.65-1.96	0.673
<b>Child Age (months)</b>			0.245			
≤ 6	1.27	0.85-1.88		1.25	0.84-1.88	0.275
> 6	<i>ref.</i>			<i>ref.</i>		
<b>Place of Delivery</b>			0.0626			
Public Hospital	7.61	0.92-62.84	0.059	12.48	1.46-10.74	<b>0.021</b>
Private Hospital	6.72	0.81-55.98	0.078	9	1.04-77.87	<b>0.046</b>
Home	<i>ref.</i>			<i>ref.</i>		
<b>Benefits to Mother</b>						
Inadequate Knowledge	<i>ref.</i>			<i>ref.</i>		
Quite Knowledgeable	4.74	2.54-8.74	<0.001	3.22	1.63-6.35	<b>0.001</b>
Very Knowledgeable	6.34	3.36-11.98	<0.001	3.41	1.61-7.25	<b>0.001</b>
<b>Knowledge on Risks</b>						
Inadequate Knowledge	<i>ref.</i>			<i>ref.</i>		
Quite Knowledgeable	5.4	2.88-10.13	<0.001	4.1	2.07-8.12	<b>&lt;0.001</b>
Very Knowledgeable	6.79	3.59-12.83	<0.001	3.82	1.84-7.97	<b>&lt;0.001</b>

## CHAPTER FIVE

### DISCUSSION

#### 5.1 Overview

Maternal employment has been cited as one of the predictors to the practice of EBF (Mbada *et al.*, 2013). Evidence from studies (Handayani *et al.*, 2013; Alina *et al.*, 2012; Nkrumah, 2017) indicate that a supportive work site environment with a private place to express milk and access to a quality breast pump helps women feel more confident in continuing to breast-feed after returning to work.

The Healthy People 2020 breast-feeding aim is to increase the percentage of infants who are breastfed to 81.9%. A number of variables influence breast-feeding rates, including a woman's age, level of education, and socioeconomic status (Thulier & Mercer, 2009).

The purpose of this study was to find the predictors of exclusive breast-feeding among women in formal employment. The study sought to answer three questions as follows: -

- i. What is the level of knowledge on exclusive breast-feeding among women in formal employment attending child welfare clinic at JOOTRH?
- ii. Which work place support facilities are available in support of exclusive breast-feeding for women in formal employment attending Child welfare clinic at JOOTRH?
- iii. What are the constraints to exclusive breast-feeding practice among women in formal employment attending child welfare clinic at JOOTRH.

The study was conducted among breast-feeding women in formal employment with infants up to 12 months of age.

## 5.2 Maternal socio-demographic characteristics

The EBF rate among employed women in the study population was at 50.1% slightly lower than the country's EBF rate of 61% (KDHS, 2014). An earlier study in the same set up (Okanda *et al.*, 2014) reported an EBF rate of 80.4%. The study by Okanda was a clinical trial done on HIV positive women with an emphasis on EBF adherence to prevent mother to child transmission (PMTCT) of HIV. Other studies in Kenya on EBF and maternal employment (Nyanga, 2012 and Wanjiku, 2015) revealed EBF rates of 13.3%, 33% and 40.9% respectively an indication that even though the EBF rate is lower than the country's target of 80% and 90% of WHO, there is an improvement in EBF among women in employment in Kenya. The finding further confirms a report by WHO that generally EBF rates have been increasing over the years. Similar to the current study, the study by Lakati interviewed mothers in formal employment, while Wanjiku captured women in both formal and informal employment. Similar EBF rates were reported in other countries such as Ghana (Danso, 2014) 48% and Australia (Weber, *et al.*, 2011) which estimated EBF rate at 40% among working women. The study in Australia was a qualitative study assessing female employee's perception of organizational support for breast-feeding at work. Other studies in Nigeria (Okwy-Nweke, 2014) and Ghana revealed an EBF prevalence of 38.3% and 40%. Both studies examined EBF among working women.

Studies indicate that a woman's level of education is directly related to breast-feeding success (Abigail *et al.*, 2013; Al-darweesh *et al.*, 2016). In the present study, participants' age, religion and marital status did not show statistical significant association with EBF. However maternal education level ( $p=0.049$ ) and place of birth ( $p=0.021$ ) were significantly associated with EBF. These findings are consistent with

those from other studies with similar results (Sholeye, *et al.*, 2015; Kasner,*et al.*, 2013; Agbo *et al.*, 2013; Yeneabat *et al.*, 2014). On the contrary, studies done elsewhere reported significant associations between EBF and age of participants (Ekanem, 2012; Nyanga *et al.*, 2012; Diji *et al.*, 2017). In these studies higher, maternal age was associated with the likelihood of EBF.

### **5.3 Breast-feeding Information**

Health care providers play an important role in influencing breast-feeding practices by counseling during the antenatal and postnatal visits. In the present study majority of the women reported to have received breast-feeding information from health care workers. While almost all the women (90%) reported to have had information related to breast-feeding, there was no significant association with EBF. However, despite attending antenatal and post-natal clinics, 20% of clients were not counseled by a health care worker. Earlier studies in other parts of the country (Kimani-Murage *et al.*, 2015; Wanjiku, 2015; Network of AIDS Researchers of East and Southern Africa (NARESA), 2011) concur with this findings. In these studies, health care professional was reported as being too busy to offer counseling on breast-feeding matters. In the NARESA survey participants viewed doctors as the most trusted to offer breastfeeding information but they were noted to be away most of the time hence the women were left with no option but to consult elderly women, peers and community health workers. In conformity are findings from FGD where a participant who was a health care worker voiced a concern of failure of colleagues to offer them breast-feeding counseling despite regular clinic visits. This was attributed to an assumption that workers in the medical field are well versed with breast-feeding information. Similar findings are documented in Ghana (Dun-dery & Laar, 2016) and Kuwait (Al-darweesh *et al.*, 2016). In these studies although almost all the

mothers had information on EBF, only 74% had been counseled by a health care worker.

#### **5.4 Knowledge on exclusive breast-feeding**

Inadequate knowledge and lack of knowledge have been associated with non-EBF (Orabi, 2015). Consequently, studies have revealed that higher knowledge is positively associated with the practice EBF. Findings from a study (Thepha *et al.*, 2017) indicated high maternal knowledge as a facilitator to EBF while (Afrose *et al.*, 2012) reported inadequate knowledge as a major contributor to non-EBF.

In the current study overall knowledge level on EBF was high among working mothers. This finding confirms data from a previous studies in Kenya (Lakati *et al.*, 2002; Kimani-Murage *et al.*, 2015) that there is high knowledge levels on EBF among women in employment. In corroboration are other studies across the globe which have revealed high maternal knowledge on breast-feeding matters (Weber *et al.*, 2011; Nkrumah, 2017; Kever *et al.*, 2014). Despite the high knowledge level, the EBF rate was not in conformity with the WHO target of 90%. Several studies presented data similar to that of the current study (Abigail *et al.*, 2013; Al-darweesh *et al.*, 2016; Motee *et al.*, 2013). These studies show that mothers exhibited high knowledge on breast-feeding aspects but the EBF rate was reported to have remained low.

Higher scores were noted on selected aspects of breast-feeding. Participants were more knowledgeable (85.1%) on duration of breast-feeding. WHO's, Global and National Infant, and Young Child Feeding Guidelines recommend that all newborns should start breast-feeding immediately (within the first hour following birth of a baby) (WHO, 2002). From the study results, almost all mothers (96.2%) were aware

that the baby should be put on the breast within one hour of birth and those infants should be EBF for six months. In conformity with findings of the current study are studies done elsewhere. Studies by (Dun-dery & Laar, 2016;Al-darweesh *et al.*, 2016) reported high breastfeeding initiation rates. Most women were able to initiate breast-feeding within one hour of delivery an indication that awareness on when to initiate breast-feeding is high.

Majority 94.1% of the mothers knew the correct period of EBF but 16.4% were not aware that breast milk alone without even water can sustain an infant for six months. Other higher scores were noted on knowledge of benefits of EBF to infant (80.4%), colostrum (75.7%) and risks of failure to breast-feed. Despite the good knowledge level displayed on risks of failure to practice exclusive breastfeeding, only (42.7%) of the respondents knew that failure to exclusively breastfeed increases the risk of HIV transmission from mother to infant for those who are HIV infected. The findings further confirm a report by WHO, 2015 which reported general inadequate maternal knowledge on the dangers of non-EBF.

Although findings of high maternal knowledge levels on breast-feeding in the current study are in conformity with several studies globally (Maonga *et al.*, 2016; Dun-dery & Laar,(2016); (Jessri *et al.*, 2013), some studies revealed contrary information. One study, (Afrose *et al.*, 2012) reported low knowledge levels among garment workers in Dhaka city. The difference in this finding is attributed to participant's low level of education. Most of the participants in the study had attained primary level of education. Other studies (Wanjiku, 2015;Tyndall *et al.*, 2016;Hassan *et al.*, 2014) reported low levels of knowledge in different aspects of breast-feeding. Low knowledge on duration of EBF was reported by Wanjiku, 2015.

The study revealed that about half of the participants did not know the correct period of EBF. This finding is different from that of the current study where majority of the mothers knew the correct period of EBF. The difference could be attributed to education level of participants and source of breastfeeding information. In the study by Wanjiku, over half of the participants had either primary education or no formal education. Additionally, the source of breast-feeding information for majority was family members and relatives who may not be having the right information. Tyndal *et al.*, equally reported very low knowledge on EBF. In this study majority of the mothers related EBF to increased respiratory diseases among infants and reported that colostrum and expressed breast milk were stale. In the current study knowledge on colostrum was high. Even though both studies employed both quantitative and qualitative approaches of data collection, all questions addressing knowledge aspects were negatively worded in the Tyndal *et al.*, study. Similarity (Hassan *et al.*, 2014) reported low scores on expressed milk. In this study majority of the participants either lacked or had inadequate knowledge on milk expression. The findings indicate that the participants had inadequate knowledge both on how to express and store expressed breast milk for later use. This corroborates with the report on the current study which revealed lower scores on knowledge of expressed milk storage. Majority of the participants were not aware of the correct period to store milk in the fridge.

Findings from this study established significant association ( $p < 0.001$ ) between knowledge level and exclusive breastfeeding practice on four of the domains tested. Similarly, in this same study other knowledge aspects tested in the six domains displayed statistical significance such as overall knowledge on duration of EBF whereby mothers who were more knowledgeable on duration of exclusive breastfeeding aspects were 12 times more likely to exclusively breastfeed than those

who had lower knowledge (OR: 12; 95% CI: 1.6-99.3; p=0.001). Other aspects that had significance include; Knowledge on benefits of EBF to infant. Mothers who had inadequate knowledge on this aspect were less likely to practice EBF as compared to those who had adequate knowledge. (OR: 0.1; 95%CI: 0.1-0.6; p<0.001). Similarly, women with inadequate knowledge on risks of non-exclusivity in breastfeeding (OR: 0.2; 95% CI:0.1-0.6; p=0.004) were less likely to exclusively breastfeed. Similar findings were noted in other studies where knowledge level was generally high (Nyanga *et al.*, 2012, Kever *et al.*, 2014, Nkrumah, 2017).

### **5.5 Work place support to continue breastfeeding**

Return to work after delivery is an important predictor that may affect the practice of exclusive breast-feeding. According to the American Academy of Paediatrics, mothers who continue to breastfeed after returning to work appreciate the maternal health benefits of nursing. Additionally, the mothers report a feeling of enhanced bonding with their infants.

According to ( KDHS ) 2014), 61% of women in Kenya are employed and most will resume work before six months following delivery. Like many other countries in Africa, Kenyan women in employment are entitled to 90 days of maternity leave (Reporting, 2012). In addition, they get 30 working days of annual leave a common benefit provided for in maternity protection. Worldwide, the typical maternity leave ranges from 12 to 14 weeks (Maternity Protection, 2000). Findings from this study showed that almost all (90.8%) mothers had received 90 days maternity leave plus the 30-day annual leave from their employer. The data is supported by findings from FGD where most participants reported to have received 90 days of maternity leave and 30 working days of annual leave making a total of 18 weeks leave. The participants were however not satisfied with the leave period. Previous studies in

Kenya (Wanjiku, 2015) and other countries like Ghana (Dun-dery & Laar,2016) presented similar findings.

Even though majority of the mothers reported to have received the three-month recommended maternity leave in the current study, a good proportion of those working in the private sector and NGO did not get the three months leave. The private sector had the largest proportion of mothers who had maternity leave of below three months. This finding is supported by data from the focused group discussion where some participants reported to have received only two months of leave. Similar findings are noted in a Malaysian study (Tan KL, 2009) which revealed that women were accorded two months maternity leave. The Malaysian government offers maternity leave of two months while the private sector ranges from a period of two weeks to 45 days.

Generally, there was very low support (27%) at work place for breast-feeding mothers. The study revealed that majority of the employers does not provide facilities in support of breastfeeding mothers while at work. Consistent with these findings are earlier studies done in Nairobi (Kimani-Murage *et al.*, 2015; Lakati *et al.*, 2002;Wanjiku, 2015). The studies reported unfavorable working conditions hindering the practice of breast-feeding at work. Data from studies in other countries Uganda (Engebretsen *et al.*, 2010) and Ghana(Dun-dery & Laar, 2016) concur with the findings of the current study that most work places lack essential breast-feeding facilities to support breastfeeding.

On the contrary, findings from this study with regard to work place support for breast-feeding mothers were inconsistent with many studies in the west. Studies in Northern England, USA and Australia to assess mothers perception of work place support (Marie, & Burks, 2015, Martin *et al.*, 2017, Weber, *et al.*, 2011) reported

availability of most work place support facilities. The Norwegian government for example provides maternity leave for 42 weeks with full pay or 52 weeks at 80% pay (Hassan *et al.*, 2014). This could be attributed to the existence of workplace breast-feeding policies, lactation programs and additional support provided to mothers through education, knowledge and resources in developed countries.

Simple strategies can allow infants, mothers, and employers to experience the benefits of workplace breast-feeding support. In the current study co- worker support, flexi working hours and supervisor support emerged as the main form of support available at work for breastfeeding mothers. Additionally, it emerged from FGDs, mothers reported to get a lot of support from colleagues. Globally, data from other studies indicate similar results (Weber, *et al.*, 2011; Kl, 2009 Diji *et al.*, 2017; Yeneabat *et al.*, 2014). In these studies, co-worker support was reported as one of the main forms for breast-feeding women at work place.

However, although most participants indicated co-worker support as the major form of work place support, some mothers disputed this statement since they felt that workmates were not supportive as they could ridicule them undeservingly. ***“My co-workers usually laugh at me if I leak milk through the clothes they claim that women who leak milk are dirty.”***(Participant number one). A study (Martin *et al.*, 2017) which assessed breast-feeding support in the military presented similar results. In this study some mothers reported lack of coworker support as the colleagues did not allow them ample break time to breast-feed or express milk. In the same study supervisor support was rated quite high. This corroborates with findings from the current study where supervisor support was reported as one of the main forms of breast-feeding support available.

Availability of separate breast milk expression room, breast-feeding room and refrigerator, would allow women to feel more confident and encourages them to practice EBF. From the findings availability of the above facilities was low with the lowest 11% being availability of on-site nursery for baby care. Similar findings were reported in Malay (Alina *et al.*, 2012) where lack of facilities at the workplace made the practice of milk expression unfeasible. In that study most of the mothers used prayer rooms for milk expression, a practice they found very uncomfortable. Ironically most reported access to a fridge where they could store EBM. In the current study majority of government employed participants reported availability of fridge as the main support facility available. Though the fridges were available, data from FGD indicated that the fridges were multi-purpose as they were used to preserve drugs (for those in health industry) and other items hence fear of contaminating breast milk.

### **5.6 Constraints to Exclusive breast-feeding**

Mothers in employment are faced with various challenges in practicing EBF. In most cases breast-feeding for a working mother is a conflict between her ability and desire. While a mother may intend to practice EBF and continue with breast-feeding for up to one year or more, personal and socio-cultural factors could act as constraints (WHO, 2002). The main hindrances to the sustained practice of EBF among working mothers as indicated by this study include; long working hours, short maternity leave and time constraints due to busy schedules. Hence combining the obligation of breast-feeding and performing official duties becomes very difficult. This finding is in conformity with data collected from FGDs and KII where mothers expressed difficulties combining work and EBF. The findings are in conformity with those of earlier studies conducted in Nairobi (Lakati *et al.*, 2002

and Kimani-Murage *et al.*, 2015) which reported long working hours and resumption of work shortly after delivery as the major barriers to optimum breast-feeding. Other studies in Thailand (Thepha *et al.*, 2017), Uganda (Engebretsen *et al.*, 2010), Ghana (Dun-dery & Laar, 2016) and Nigeria (Agbo *et al.*, 2013) reported similar findings. The Thailand study was a narrative review which revealed shorter breast-feeding periods among working women. This was attributed to the difficulties encountered by the women in an attempt to combine breastfeeding and work.

Findings from the current study are however different from those of a study in Kuwait (Al-darweesh *et al.*, 2016). In this study embarrassment emerged as the main constraint to breast-feeding since women were not free to breast-feed in public. Other studies established lactation problems such as painful breasts, difficulties expressing milk, lack of milk and maternal illness as the main constraints to EBF (Agunbiade, 2012, Alina *et al.*, 2012 and Engebretsen *et al.*, 2010). These findings though not mentioned as the main barriers, are consistent with those of the current study.

### **5.7 Predictors of exclusive breastfeeding**

Predictors of EBF are varied. Studies in different contexts have identified different predictors of EBF. They range from maternal level of education, socio-cultural and economic factors among others. In one study (Motee *et al.*, 2013), it was concluded that the main determinants of EBF include resumption of work followed by milk insufficiency. Another study, (Jessri *et al.*, 2013) revealed higher odds (3.76) of EBF for mothers that held a post-graduate degree in comparison to those that did not have a university degree. These findings are confirmed by those of the current study where mothers who had tertiary education were almost 3 times more likely to EBF compared to mothers who had secondary education. Similar results were reported by

(Diji *et al.*, 2017) and (Al-darweesh *et al.*, 2016). In both studies women who were educated were more likely to EBF than their less educated counterparts. Even though education level has been documented as an important predictor of EBF, previous studies failed to demonstrate this association. A study in Australia (Weber, *et al.*, 2011) did not find any association between maternal education and EBF. Unlike the current study majority of participants in the Australia study had university education.

Place of delivery was positively associated with EBF. Mothers who delivered at public hospitals and private hospitals were more likely to EBF compared to mothers who delivered at home. Contrary to these are results of a Canadian study (Al-sahab *et al.*, 2010). In this study women who gave birth at home were more likely to exclusively breastfeed as compared to those who delivered in health care facilities. The difference could be due to the Kenya Breast Milk Substitutes (regulation and control) bill, 2012 that prohibits advertisement and promotion of breast milk substitutes and places strong emphasis on baby friendly hospitals.

Knowledge has been consistently documented as a strong predictor of EBF in many studies (Stuebe, & Bonuck, 2011; Dun-dery & Laar, 2016). In the current study, respondents who knew the benefits of exclusive breast-feeding to the mother, those who were quite knowledgeable and very knowledgeable were more likely to EBF compared to those who had inadequate knowledge. For knowledge on risks, those who were quite knowledgeable and very knowledgeable were more likely to EBF compared to those who had inadequate knowledge. These findings are comparable to those of other studies worldwide. In East Africa, one study (Maonga *et al.*, 2016) reported significant associations between maternal level of knowledge and EBF where good knowledge was associated with twice the odds of EBF. Similarly,

maternal breast-feeding knowledge was found to influence infant feeding behavior in a study assessing breast-feeding knowledge among Chinese mothers living in Ireland (Zhou *et al.*,2010). The high level of maternal knowledge on breast-feeding matters can be attributed to consistent antenatal and post-natal teachings on breast-feeding aspects.

## CHAPTER SIX

### 6.0 SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

#### 6.1 Summary of findings

This study was a cross sectional study aimed at establishing predictors of exclusive breast-feeding among women in formal employment attending child welfare clinic at the Jaramogi Oginga Odinga Teaching and Referral hospital in Kisumu. The rate of continuous EBF at the time of the study was 51.1%.

In this study, results of the univariate analysis showed that maternal level of education, parity and level of knowledge had significant associations with EBF. Most of the socio-demographic, factors had no significant association with EBF. Though the study did not find any significance between available nursery at the work place and EBF, availability of most work place support facilities and type of employer were significantly associated with the practice. The study identified various constraints to EBF among working women. The main constraint was work related such as long working hours and busy work schedules which in turn leave the mothers exhausted and with little time to breastfeed their infants.

#### 6.2 Conclusions

In most of the cases breast-feeding for a working mother is a conflict between her ability and desire. Most mothers return to work after the end of the maternity leave which is less than 6 months thus hampering the practice of EBF (Tsai, 2013). From the study findings, the EBF rate among women in formal employment attending the CWC at JOOTRH is lower than that recommended by WHO. Though most of the mothers exhibited adequate knowledge on EBF, only half were exclusively breast-

feeding. The study therefore concluded that despite the low EBF rate, working women are quite knowledgeable on EBF.

Maternal level of knowledge, place of delivery and education level emerged as the strongest predictors of EBF. Women who had higher education, those that delivered in public hospital and those that were more knowledgeable on breast-feeding aspects tested were more likely to EBF than their counterparts. Other findings from the study revealed a positive association between availability of work place support facilities with EBF. The study therefore concluded that though availability of day-care/crèche at work place to cater for the babies and children while the mothers work had no influence on EBF, presence of work place support has a positive influence on EBF thus availability of work place facilities will enhance EBF among women in paid employment.

The study also revealed that most working mothers get the recommended 18 weeks (90 days of maternity leave and 30 working days of annual leave) as recommended by the Maternity Protection 2000 and the Kenya Employment Act 2012. This confirms that some employers in Kenya are compliant with the recommendation. However, the 18 weeks leave falls below the expectation of the mothers as they feel it is inadequate.

From the findings, women in formal employment are faced with various constraints which in turn interfere with their ability to EBF. Work related challenges emerged as the major constraints. Inadequate milk production was the least reported challenge thus a confirmation that given adequate support, women in employment can adequately practice EBF. In conclusion, maternal level of knowledge, level of education and place of delivery are positive predictors of EBF among working mothers.

### **6.3 Recommendations**

Based on the findings and conclusions of this study, the following recommendations are made: -

1. Educational programs such as teaching on milk expression that encourage breast-feeding knowledge into practice should be strengthened to enhance the practice of EBF among women in formal employment.
2. Women in paid employment should be supported to EBF, through provision of breast-feeding -friendly work environment such as establishment of day care centers, breast-feeding and milk expression rooms.
3. Employers should implement the recommended work policies of flexible working hours for women in employment with infants below six months to enable them continue exclusively breast-feeding.

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## APPENDICES

### APPENDIX I: INFORMED CONSENT FORM FOR PARTICIPANTS IN THE RESEARCH PROJECT

Title: The predictors of exclusive breast-feeding among working mothers on formal employment attending child welfare clinic at JOOTRH.

Dear participant,

My name is Damaris Moraa

I am a Masters student at Masinde Muliro University of Science and Technology

Currently i am conducting a study to determine the predictors of exclusive breast-feeding among working mothers in formal employment attending Child Welfare Clinic at JOOTRH. I would like to request an interview with you regarding breast-feeding issues. Please understand that participation is at will and you can decide not to participate or withdraw from the interview at any point in time without penalty or loss.

**If you accept to participate in the study please read the following then sign below.**

I agree to participate in the research project

The research project and participation have been explained to me and I have an opportunity to ask questions

I am 18 years and over

My participation is on voluntary basis

I understand that any time during the course of the study I am free to interrupt or withdraw my participation without any penalty

I understand that because of the nature of the research the researcher is obliged to keep the names of the participants confidential

I am aware I will not receive any compensation for my participation.

Signature of respondent.....

Date.....

Signature of researcher.....

Date.....

Name:

For any concerns regarding this piece of research, please feel to contact the researcher on the following contacts.

Email: [damoraa99@gmail.com](mailto:damoraa99@gmail.com)

**APPENDIX II: STUDY QUESTIONNAIRE**

Topic: Predictors of exclusive breast-feeding among women in formal employment seeking Child Welfare Clinic services at Jaramogi Oginga Odinga Teaching and Referral Hospital.

Dear Respondent,

This questionnaire is designed to collect data on breast-feeding practices of mothers in formal employment attending JOOTRH CWC clinic. You are therefore invited to participate. All responses will be kept confidential and only for the purpose of this academic study.

**Questionnaire No.:**.....

**Date:**.....

**INSTRUCTIONS**

- (a) Explain the purpose of the interview to the participant
- (b) Ask for consent before proceeding with the interview
- (c) Make sure all questions are answered
- (d) Tick as appropriate

<b>PART A: RESPONDENTS PERSONAL CHARACTERISTICS</b>
Please provide the following information about yourself
a). What is your exact age in years? -----
b).What is your marital status? (Tick as appropriate) Single <input type="checkbox"/> Married <input type="checkbox"/> Separated <input type="checkbox"/> Divorced <input type="checkbox"/> Cohabiting <input type="checkbox"/> Widowed <input type="checkbox"/>
c). How many children do you have? ----- d). How old is your current youngest child?-----
e). What is your highest Level of Education? (Tick as appropriate) Non- formal <input type="checkbox"/> Primary <input type="checkbox"/> Secondary <input type="checkbox"/> College (certificate) <input type="checkbox"/> Diploma <input type="checkbox"/> Degree <input type="checkbox"/> Masters <input type="checkbox"/>
f). What is your religion or denomination? (Tick as appropriate) Christian <input type="checkbox"/> Muslim <input type="checkbox"/> No religion <input type="checkbox"/> g). Other (Specify).....
h). What is your occupation? .....

i). Who is your employer? (Tick as applies)

Ministry of health  NGO  TSC  Securicor firm  Private company   
Bank  others  (Specify)

h). What is your salary scale in Kshs? (Tick as appropriate)

Below 5000  5000-15,000  15-25,000  25000-35,000   
35,000-50,000  Above 50,000

**PART B: EXCLUSIVE BREAST-FEEDING RATE**

This section requires you to answer questions on how you are feeding or how you were feeding your baby at below 6 months.

i). Besides breast milk what other fluids or foods are you feeding your baby on(only for mothers with infant below six months) (tick as applies)

a. Breast milk only  b. Formula milk  c. Cow's milk  d. Water   
e. Porridge  f. Mashed potatoes  g. Ugali and vegetable soup

h. Juice and soda  Others(specify)-----

ii). Besides breast milk which other feeds did you give your infant from birth to six months(for mother with infants above six months to one year) (tick as applies)

a. Breast milk only  b. Formula milk  c. Cow's milk   
d. Water  e. Porridge  f. Mashed potatoes   
f. Ugali and vegetable soup  Others (specify)-----

iii). What is/was the reason for introduction of other foods besides breast milk.

Baby not getting enough from breast-milk  Baby crying a lot

Advised by family members  Sickness of mother

Advised by friends  Busy at work

Others (specify).....

**PART C: MATERNAL KNOWLEDGE ON EXCLUSIVE BREAST-FEEDING**

**This section will test your knowledge on breast-feeding matters. If you agree with the statement provided select option YES and NO for a false statement. Select not sure if you are not sure of the answer.**

**I. DURATION OF BREAST-FEEDING**

a). Breast-feeding should be initiated within one hour birth YES  NO  NOT SURE

b). Breast milk alone without even water can sustain a baby for the first six months  
YES  NO  NOT SURE

c). The recommended age for introducing other feeds alongside breast milk is six months YES  NO  NOT SURE

d). Breast-feeding should be done on demand YES  NO  NOT SURE

e). Breast-feeding should be continued for up to 2 years YES  NO  NOT SURE

f). Babies below six months should be given water to quench their thirst YES   
NO

NOT SURE

## II. COLOSTRUMS

a). The first yellowish milk colostrum should be fed to the baby YES  NO   
NOT SURE

b). Colostrum should be discarded YES  NO  NOT SURE

c). Colostrum causes constipation among babies YES  NO  NOT SURE

d). Breast milk should be the first feed a baby is given after birth YES  NO   
NOT SURE

## III. BENEFITS OF EXCLUSIVE BREAST-FEEDING

a). What are the benefits of exclusive breast-feeding to the infant? (Tick as applies)

i. Reduces the risk of respiratory diseases among babies YES  NO  NOT SURE

ii. Increases the baby's intelligence YES  NO  NOT SURE

iii. Exclusively breast-fed babies are less prone to diarrhoea YES  NO   
NOT SURE

iv. Breast-feeding enhances mother infant bonding YES  NO  NOT SURE

v. Breast-feeding prevents infant malnutrition YES  NO  NOT SURE

vi. Babies sleep well after they receive adequate breast-milk YES  NO   
NOT SURE

b). What are the benefits of exclusive breast-feeding to the mother?(Tick as applies)

i. Exclusive breast-feeding is beneficial in spacing birth YES  NO

NOT SURE

- ii. Breast-feeding helps to stimulate uterine contraction after birth of the baby  
YES  NO  NOT SURE
- iii. Mothers who practise exclusive breast-feeding may achieve pre-pregnancy  
iv. weight faster YES  NO  NOT SURE
- v. Frequent breast-feeding may prevent breast engorgement YES  NO  
NOT SURE
- vi. Exclusive breast-feeding reduces absenteeism from work place due to ill  
baby YES  NO  NOT SURE
- vii. Exclusive breast-feeding is cost effective YES  NO  NOT SURE

**IV. BREAST MILK EXPRESSION**

- i. Babies can be fed on expressed milk while the mother is away YES  NO  
 NOT SURE
- ii. Expressed breast milk may be preserved between 2-8<sup>0</sup>C in a lower part of a  
refrigerator for over 48 hours YES  NO  NOT SURE
- iii. Expressed breast milk may be mixed with the previous expressed  
Milk YES  NO  NOT SURE
- iv. Expressed breast milk may be boiled YES  NO  NOT SURE
- v. To avoid wastage leftover expressed breast milk that has been used may be  
stored for use again YES  NO  NOT SURE

**V. RISK OF FAILURE TO EXCLUSIVELY BREAST-FEED**

- i. Can lead to infant malnutrition YES  NO  NOT SURE
- ii. Babies who are not exclusively breast-fed have a high chance of  
contracting HIV infection if their mothers are HIV positive YES  NO  
 NOT SURE
- iii. Can lead to increased diarrheal disease and deaths in children YES  NO  
 NOT SURE
- iv. Others specify.....

**PART D: SOURCE OF BREAST-FEEDING INFORMATION**

**This section aims to find out if you had received breast-feeding information at any particular period. Tick as appropriate.**

- a. Did you receive any counseling or information on breast-feeding?

Yes  No

b. If yes what was the source of the information /counseling?

i. Health worker  ii. Friends and relatives

ii. Media (radio, television, newspapers, magazines and internet).

iii. Other (specify).....

c. When did you receive breast-feeding information? (To be addressed to mothers who got the counseling from a health worker)

i. Before delivery (during antenatal clinic visits)

ii. At the time of delivery

iii. After delivery before discharge from hospital

iv. During postnatal clinic/CWC visits.

d. What health messages on breast-feeding did you receive during counseling

**PART E: CONSTRAINTS TO EXCLUSIVE BREAST-FEEDING**

**This part is intended to find out the difficulties mothers in employment face that make it difficult for them to exclusively breastfeed. It entails selecting YES if one is in agreement with the statement or NO if she does not agree.**

a). What are the reasons mothers fail to breast **exclusively**?

i. They are held up at work due to long working hours YES  NO

ii. They do not have enough milk YES  NO

iii. Painful breasts YES  NO

iv. Baby refuses to breast-feed YES  NO

v. Mothers illness YES  NO

vi. Advised from family member to introduce other feeds YES  NO

vii. Short maternity leave YES  NO

viii. Baby cries a lot YES  NO

ix. Lack of time due to busy schedules YES  NO

x. Difficulties in expressing breast milk YES  NO

**PART F: EXCLUSIVE BREAST-FEEDING PRACTICES AND WORK**

a). Please tell me how old your child was when you resumed work after delivery?.....

b). How did/do you ensure your baby breast-feeds exclusively while you are /were away at work? (tick as appropriate)

i. Breast-feed before, after and during work (Breaks) YES  NO

- ii. Baby brought to work place YES  NO
- iii. Work place provision for breast-feeding YES  NO
- iv. Use of expressed breast milk YES  NO
- v. Baby fed on formula milk or other feeds YES  NO

c). Which interventions are available at your work place in support of breast-feeding?(tick all that apply)

- i. Day care centers
- ii. Breast-feeding rooms
- iii. Milk expression rooms
- iv. Breast-feeding breaks
- v. Shorter working hours
- vi. Presence of a fridge to store expressed breast milk
- vii. Breast-feeding policies

**PART G: HEALTH-FACILITY RELATED FACTORS INFLUENCING ACCEPTANCE TO EXCLUSIVE BREAST-FEEDING**

a). Where did you deliver your baby?

- i. Public hospital
- ii. Private hospital
- iii. At home by experienced and respected woman

b). Did your baby receive anything to drink before it was first put to the breast?

- Yes  No

c). If yes what liquid was given?

- i. Glucose water
- ii. Plain boiled water
- iii. Medicine
- iv. formula milk
- v. Other milk

d). What was the reason for giving this liquid?

- i. Delayed milk production by the mother
- ii. Infant perceived unwell
- iii. Other reasons specify.....
- iv. Mother unwell

Please provide any other information you feel is important concerning breastfeeding.....

Thank you

### **APPENDIX III: KEY INFORMANT INTERVIEW (interview guide)**

Who will be interviewed?

- I. The nurse in charge of MCH/FP
- II. The nutritionist in charge

Q1: How can you describe exclusive breast-feeding in JOOTRH CWC ?

Q2: What health information do you provide to ANC mothers and the breast-feeding mothers?

Q3: Do you feel that babies who are exclusively breastfed reduce or increase the chances of contracting HIV post-nataly to mothers who are HIV positive?

Please provide any other information you feel is important concerning breast-feeding.

#### **Focus Group Discussion Guide**

1. What are the sources of infant feeding information in your area?
2. What are some of the messages that you get regarding breast-feeding?
4. From your understanding, what are the benefits of breast-feeding?
5. What is the recommended period of exclusive breast-feeding?
6. How common is exclusive breast-feeding practice in your community?
8. Why do some mothers choose not to practice exclusive breast-feeding?
10. Is it appropriate for a mother to express milk for the baby?
11. How should expressed milk be stored and heated?

## APPENDIX IV: ETHICAL APPROVAL TO CONDUCT RESEARCH



MASINDE MULIRO UNIVERSITY OF SCIENCE AND TECHNOLOGY  
Tel: 056-31375  
Fax: 056-30153  
E-mail: [tel@mmust.ac.ke](mailto:tel@mmust.ac.ke)  
Website: [www.mmust.ac.ke](http://www.mmust.ac.ke)  
P. O. Box 190  
Kakamega  
50100  
Kenya

### Institutional Ethics Review Committee (IERC)

MMU/COR: 403009(47)

13<sup>th</sup> June, 2016

Damaris Moraa  
Registration No. HNR/G/22/14  
Masinde Muliro University of Science and Technology  
P. O. Box 190-50100  
KAKAMEGA

Dear Moraa,

#### RE: ETHICAL APPROVAL TO CONDUCT RESEARCH

The IERC received your proposal titled "*Predictors of Exclusive Breast-Feeding Practice among Women in Formal Employment Attending Child Welfare Clinic at Jaramogi Oginga Odinga Teaching and Referral Hospital*" for review. Having reviewed your work, the committee has given ethical clearance for you to conduct research as proposed.

On behalf of IERC and the University Senate, my congratulations. We wish you success in your research endeavour.

Yours faithfully,

Dr. Nguka Gordon  
**Ag. Chairman, Institutional Ethics Review Committee**

Copy to:

- The Secretary, National Bio-Ethics Committee
- Vice Chancellor
- DVC (PR&I)
- DVC (A & F)
- DVC (A&SA)

## APPENDIX V: ETHICAL APPROVAL TO CONDUCT RESEARCH FROM JOOTRH



### MINISTRY OF HEALTH

Telegrams: "MEDICAL", Kisumu  
Telephone: 057-202001/2020803/2020321  
Fax: 057-2024337  
E-mail: [ercjoothr@gmail.com](mailto:ercjoothr@gmail.com)  
When replying please quote

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

30<sup>th</sup> May, 2016

ERC.1B/VOL.1/262

Date .....

Ref: .....

DAMARIS MORAA,  
MASINDE MULIRO UNIVERSITY OF SCIENCE AND TECHNOLOGY.

Dear Damaris,

**RE: FORMAL APPROVAL TO CONDUCT RESEARCH ENTITLED: "*PREDICTORS OF EXCLUSIVE BREASTFEEDING AMONG WOMEN IN FORMAL EMPLOYMENT ATTENDING CHILD WELFARE CLINIC AT JOOTRH*".**

The JOOTRH ERC (ACCREDITATION NO. 01713) has reviewed your protocol and found it ethically satisfactory. You are therefore, permitted to commence your study immediately. Note that this approval is granted for a period of one year (30<sup>th</sup> May, 2016 to 30<sup>th</sup> May, 2017). If it is necessary to proceed with this research beyond the approved period, you will be required to apply for further extension to the committee.

Also note that you will be required to notify the committee of any protocol amendment(s), serious or unexpected outcomes related to the conduct of the study or termination for any reason.

Finally, note that you will also be required to share the findings of the study in both hard and soft copies upon completion.

The JOOTRH ERC takes this opportunity to thank you for choosing the institution and wishes you the best in your endeavours.

Yours sincerely,

WILBRODA N. MAKUNDA  
For: **SECRETARY - ERC,**  
**JOOTRH - KISUMU.**



## APPENDIX VI: RESEARCH AUTHORIZATION PERMIT



### NATIONAL COMMISSION FOR SCIENCE, TECHNOLOGY AND INNOVATION

Telephone: +254-20-2213471,  
2241349, 3110971, 2219420  
Fax: +254-20-318245, 318249  
Email: [dg@nacosti.go.ke](mailto:dg@nacosti.go.ke)  
Website: [www.nacosti.go.ke](http://www.nacosti.go.ke)  
When replying please quote

9<sup>th</sup> Floor, Utoka House  
Ikara Highway  
P.O. Box 29623-00100  
NAIROBI-KENYA

Ref. No. **NACOSTI/P/17/57330/16349**

Date: **2<sup>nd</sup> May, 2017**

Damaris Moraa Ongori  
Masinde Muliro University of  
Science and Technology  
P.O Box 190-50100  
**KAKAMEGA.**

#### **RE: RESEARCH AUTHORIZATION**

Following your application for authority to carry out research on "*Predictors of exclusive breastfeeding among women in formal employment attending child welfare clinic at Jaramogi Oginga Odinga Teaching and Referral Hospital.*" I am pleased to inform you that you have been authorized to undertake research in **Kisumu County** for the period ending **30<sup>th</sup> March, 2018.**

You are advised to report to **the County Commissioner, the County Director of Education and the County Director of Health Services, Kisumu County** before embarking on the research project.

On completion of the research, you are expected to submit **two hard copies and one soft copy in pdf** of the research report/thesis to our office.

A handwritten signature in blue ink, appearing to read 'Galerwa'.

**GODFREY P. KALERWA MSc., MBA, MKIM**  
**FOR: DIRECTOR-GENERAL/CEO**

Copy to:

The County Commissioner  
Kisumu County.

The County Director of Education  
Kisumu County.

National Commission for Science, Technology and Innovation, U.S.O. 3030, 2006 Centre



**APPENDIX VII: MAP OF KENYA SHOWING JOOTRH**



Kenya (Maps\_of\_The\_World, 2002-2015)



Kisumu Map (GoogleMaps, 2015)