

**EXCLUSIVE BREASTFEEDING PRACTICES AND ASSOCIATED
FACTORS AMONG MOTHERS WITH INFANTS AGED 0-6
MONTHS IN KIBAHA DISTRICT-COAST REGION**

By

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**A Dissertation Submitted in Partial Fulfillment of the Requirements for the Degree
of Master of Public Health of the Muhimbili University of Health and Allied
Sciences**

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CERTIFICATION

The undersigned certifies that she has read and hereby recommends for acceptance by the Muhimbili University of Health and Allied Sciences a dissertation entitled: *Exclusive breastfeeding practices and associated factors among mothers with infants aged 0-6 months in Kibaha district-Coast region*, in partial fulfillment of the requirements for the degree of Master of Public Health.



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Date: 4th November 2008

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I, **Julieth J. Shine** hereby declare that this dissertation is my original work, and that it has not been and will not be submitted for diploma or degree in any other university

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ABSTRACT

Exclusive breastfeeding (EBF) has been promoted in the country since early 1990s; however the practice of EBF in many communities is still low especially in rural areas. Sub-optimal breastfeeding practices are an important factor contributing to malnutrition. This study aimed at assessing EBF practices and associated factors among mothers with infants aged 0-6 months living in the district. A cross-sectional study was carried out in July 2008. Data were collected through face to face interviews of 284 lactating mothers with infants aged 0-6 months using a structured questionnaire. Participants were selected using multistage sampling procedure. Findings revealed that (281) 98.9% of the interviewed mothers were breastfeeding their babies and only 18.1% of infants were EBF. Sub-optimal breastfeeding practices are still persisting, use of pre-lacteal feeds, discarding of yellowish milk, delayed in initiation of breastfeeding and early complementation. Marital status, occupation, mother's level of knowledge on EBF and information provided to the mothers was significantly associated with EBF. Binary logistic regression demonstrated that formally employed mothers were more than three times more likely to practice EBF than housewives (OR = 3.9; 95% CI :1.3-12.3). It was also found that mothers who were supported with any breastfeeding information were almost three times likely to practice EBF as compared to those who did not (OR = 3.3; 95% CI:.6-6.6). Promotion of EBF practices should based on raise of knowledge on EBF, provision of educational materials and appropriate training on breastfeeding to the health workers as well as initiation of community-based breastfeeding support groups.

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ABBREVIATIONS AND ACRONYMS

AED	Academy for Educational Development
AIDS	Acquired Immune Deficiency Syndrome
BF	Breastfeeding
EBF	Exclusive Breastfeeding Feeding
BFHI	Baby Friendly Hospital Initiative
HIV	Human Immunodeficiency Virus
IMCI	Integrated Management of Childhood Illnesses
IYCF	Infant and Young Child Feeding
MUHAS	Muhimbili University of Health and Allied Sciences
MDG	Millennium Development Goals
MoHSW	Ministry of Health and Social Welfare
MTCT	Mother to Child Transmission
NIYCN	National Infant and Young Child Nutrition Programme
PMTCT	Prevention of Mother to Child Transmission
RCH	Reproductive and Child Health
TBA	Traditional Birth Attendants
TDHS	Tanzania Demographic Health Survey
TFNC	Tanzania Food and Nutrition Centre
UNICEF	United Nations Children's Fund
WHO	World Health Organization

CHAPTER ONE

1.0 INTRODUCTION

1.1 Background

Appropriate feeding practices have fundamental importance in the survival, growth, development of infants and children everywhere (WHO, 2001). Breastfeeding is generally accepted as the best form of infant feeding as it contributes 100% of the daily nutritional requirement of children 0–6 months, 50% for children of 6–12 months and 35% of the nutritional requirement for children 12–24 months (MoHSW, 2007) and it is promoted worldwide because of its many benefits to infant and mother (Kruger et al, 2001). Breastfeeding practices can save as many as 1.5 million infants lives every year as it provides the significant protection against diseases (WHO, 2003). The evaluation of the Millennium Development Goals (MDGs) done recently has shown that exclusive breastfeeding for the first six months is among the most effective interventions to achieve MDG number four, (Bryce et al, 2006).

The World Health Organization (WHO 2004), defines exclusive breastfeeding as the practice of feeding only breast milk (including expressed breast milk) and allows the baby to receive vitamins, minerals or medicine. Water, breast milk substitutes, other liquids and solid foods are excluded. Worldwide breastfeeding is usually initiated early, however, exclusive breastfeeding for the first six months is not widely practiced, instead, at very early age many infants are given water, breast milk substitutes or other

drinks or feeds (WHO 2004). Available information indicates that only 35% of infants are exclusively breastfed (EBF) during the first four months worldwide (WHO 2003). In sub-saharan Africa and the East African countries including Tanzania, exclusive breastfeeding rate for six months is 30% and 41% respectively (UNICEF 2006). Data from the Tanzania Demographic Health Survey indicated that only 41% of infants below six months of age are exclusively breastfeed (TDHS 04/05).

The WHO/UNICEF Global Strategy (2003) on Infant and Young Child Feeding which was adopted by the Ministry of Health and Social Welfare recommended that infants should be exclusively breastfed for the first six months; thereafter they should be given appropriate complementary foods while continuing with breastfeeding up to two years of age or beyond. Failure of exclusive breastfeeding practices for the first six months of life is a risk factor for infant and childhood morbidity and mortality due to malnutrition (WHO/UNICEF, 2003). Malnutrition has been responsible, directly or indirectly, for 60% of the 10.9 million deaths annually among under five children (WHO/UNICEF, 2003). Two thirds of those deaths are often associated with inappropriate feeding practices that occur during the first year of life. It has been estimated that exclusive breastfeeding for the first six months could reduce infant mortality rate by 13% [Jones et al, 2003). Exclusively breastfed children are at a much lower risk of infections from diarrhea and acute respiratory infection than infants who receive other foods (AED 2004). Exclusive breastfeeding seems to have a protective effect on HIV transmission when compared to mix feeding practices (Iliff et al, 2005). WHO encourages exclusive

breastfeeding for the first six months of life and discourages unnecessary use of breast-milk substitutes for the part of the population who do not know their HIV serostatus.

The Tanzania Food and Nutrition Centre (TFNC) in collaboration with other partners have been implementing a National Program on Infant and Young Child Nutrition initiated by the Ministry of Health and Social Welfare in early 1990s. The overall goal of the program is to empower lactating mothers to breastfeed their infants exclusively and introduce complementary feeding after six months. The program has managed to train health care providers on lactation management at different levels, initiation and implementation of the Baby Friendly Hospital Initiative (BFHI) in several hospitals as well as development and distribution of educational materials. The ministry also formulated maternity legislation policy on breastfeeding for the working mothers and development of the national policy guidelines on infant feeding in the context of HIV/AIDS.

Lactating mothers whether positive, negative or unknown HIV status are supposed to be provided with accurate information on how to breastfeed exclusively by trained skilled health care providers. The family and the community play a big role in supporting mothers to breastfeed exclusively. However, the low rate of exclusive breastfeeding and the increase in infant morbidity and mortality in the country called for a needs assessment of exclusive breastfeeding practices and associated factors among mothers with infants aged 0-6 months, a study which conducted in Kibaha district.

1.2 Problem Statement

Infant feeding practices world-wide are not optimal. Global information indicates that only 39% of all infants world-wide are exclusively breastfed (WHO 2003). In sub-Saharan Africa, sub-optimal breastfeeding practices and failure to practice exclusive breastfeeding are prevailing in many societies (Semega-Janneh et al, 2001). In Tanzania, exclusive breastfeeding is rare practice in many parts of the country (Shirima et al, 2001, de Paoli et al, 2001). Inappropriate infant feeding practices is an important factor contributing to the malnutrition of children (Ighogboja 1992, Madzingira, 1995). In Tanzania, about 36 percent of all child deaths in early infancy are due to malnutrition and the important cause being sub-optimal breastfeeding practices (MOHSW, 2007)

Factors influencing breast-feeding have been investigated and published globally (Duong et al 2005). However, factors affecting breast-feeding operate differently across the countries (WHO, 1998).

Low exclusive breastfeeding practice is probably due to lack of awareness of the benefits of optimal practices, inadequate training and counseling skills of health workers, poor access to information, beliefs and customs, family pressures and unsupportive work environments. An exclusive breastfeeding practice differs from one area to another therefore more studies are needed. On the other hand HIV pandemic poses unique challenges in promoting breastfeeding practices due to the risk of mother-to-child transmission through breastfeeding (WHO/UNICEF, 2003). As a result mothers

with unknown status might be scared to breastfeed their infants due to spillover effect from those HIV positive mothers who opted not to breastfeed their infants.

In Tanzania, detailed studies on patterns, practices and beliefs related to exclusive breastfeeding are lacking in the published literature and factors associated with exclusive breastfeeding have not been studied (Shirima et al, 2001). The study was therefore conducted in order to assess current exclusive breastfeeding practices among lactating mothers with infants 0-6 months living in Kibaha district.

1.3 Rationale of the study

Breastfeeding practices are strongly influenced by culture, beliefs and social relationship (Shirima et al, 2001 and de Paoli et al, 2001), thus breastfeeding patterns are expected to vary between community and individual mothers, however, based on studies done elsewhere factors influencing breastfeeding vary among different population, which makes generalizations for populations with different characteristics (Cordova et al, 2007). In order to achieve sustainable infant feeding practices in Tanzania a deep understanding of the social, economic and cultural factors that influence breastfeeding practices is important to help policy and decision makers to take appropriate action.

Therefore information that was generated in this study would help policy makers in planning feasible interventions and strengthening the existing child feeding program

thus contributing in reducing malnutrition rates and other related health problems. The information would be also used to design messages to encourage mothers, who are decision makers, to take appropriate steps befitting their local conditions to perform exclusive breastfeeding.

1.4 Objectives of the Study

1.4.1 Broad objective

To assess exclusive breastfeeding practices and associated factors among mothers with infants aged 0 -6 months living in Kibaha district

1.4.2 Specific Objectives

1. To determine the proportion of infants who are exclusively breastfed irrespective of their mothers HIV infection status
2. To measure the association between socio-demographic characteristics of lactating mothers of infants 0 -6 months and their exclusive breastfeeding practices
3. To assess mother's level of knowledge regarding exclusive breastfeeding practices irrespective of their HIV infection status and their exclusive breastfeeding practices
4. To identify social factors within the study community associated with exclusive breastfeeding practices
5. To examine barriers associated with exclusive breastfeeding practices amongst lactating mothers

6. To develop recommendations with respect to exclusive breastfeeding for consideration by national authorities

1.5 Research Questions

1. What is the proportion of infants who are exclusively breastfed irrespective of their mothers HIV infection status?
2. What is the level of mother's knowledge on exclusive breastfeeding irrespective of their HIV infection status?
3. What are the social factors associated with exclusive breastfeeding?
4. What are the barriers that mothers face during lactating period?

CHAPTER TWO

2.0 LITERATURE REVIEW

2.1 Breastfeeding and Exclusive Breastfeeding Status

Breastfeeding is a learned behavior in many societies in African countries. Breastfeeding confers many health benefits on both mothers and their babies and is widely acknowledged as the optimal way of nourishing a baby for at least the first four to six months of life (Lawrence et al, 1999). The HIV/ AIDS pandemic has resulted in major decline in breastfeeding in the world (Banyana et al, 2003). However, in most parts of African, breastfeeding is a norm and remains the cultural way of feeding infants, and mothers who do not breastfeed are considered unusual. Infant and young child feeding practices world-wide are not optimal. Globally, only 39% of all infants world-wide are exclusively breastfed (WHO 2003). Study conducted in Nigeria reported that only 20% of mothers practiced exclusive breastfeeding to their infants up to six months (Salami, 2006). According to Sibanda et al, 2004, found that in different parts of Southern Africa exclusive breastfeeding rates range between 19% and 76%.

In Tanzania, exclusive breastfeeding practice is not widely practice in many parts of the country. Studies conducted in different parts of Tanzania Morogoro region, Igunga district, Southwestern of Tanzania, and Kilimanjaro showed that the practice of exclusive breastfeeding was rare and not widely practiced among mothers (Shirima et al, 2001, Poggensee et al, 2003, Agnarsson et al, 2001, and de Paoli et al, 2001). A recent

cross sectional study conducted in Dar-es-salaam, Ilala municipal on child caring practices found that only 9 percent of mothers were exclusive breastfeeding (Kulwa et al, 2006). The low prevalence rate were far below the national prevalence of 41% and other studies conducted in Tanzania, this could be due to small size of the studied participants which were 100 participants while others studies had more than 300 study participants (de Paoli et al, 2001, Shirima et al, 2001).

2.2 Factors influencing exclusive breastfeeding practices

Research investigating factors that are involved in early cessation of exclusive breastfeeding has been carried out in many different settings and has identified socioeconomic, demographic, cultural, obstetric, and pediatric factors (Lawoyin et al, 2001, Dearden et al, 2002). Some of these factors influence the decision to supplement breast milk to the infants before the recommended age of six months. However, these factors vary among different populations, therefore becomes impossible to make generalizations for populations with different characteristics.

2.2.1 Socio-demographic factors influencing exclusive breastfeeding

Several studies indicated that exclusive breastfeeding duration increases as the age of the mothers increase (Lawoyin et al, 2001, Della et al, 2006). This indicates that young mothers are lacking breastfeeding experience and they might not be able to make their own decision regarding how to feed their babies. A community study conducted in Turkey on exclusive breastfeeding reported that mothers with higher level of education

were more likely to exclusively breastfeed their babies than those with middle level of education (Zekiye 2006). The same study indicated that working mothers breastfeed exclusively to a greater extent than those who did not work 68.8% and 47.2%, respectively. This higher difference on breastfeeding practices might be due to the small sample size of the working mothers used. Another study conducted in Nigeria investigating barriers to successful exclusive breastfeeding found that 15.5% of urban mothers and 14% of rural mothers indicated that breast-feeding was adversely affected by their work (Alutu et al, 2005). The urban bankers nursing mothers were not able to breast-feed exclusively due to the nature of their work. However, employed lactating mothers would be able to breastfed exclusively if they get adequate support from their employers. A study conducted in Nigeria on factors associated with exclusive breastfeeding found that primiparous mothers were less likely to breastfeed their babies exclusively (Lawoyin et al, 2001).

2.2.2 Mother's knowledge on the importance of exclusive breastfeeding

Health professional should empower mothers with appropriate breastfeeding skills, information and ways to practice optimal exclusive breastfeeding. Lack of enough information and knowledge regarding the optimal duration of exclusive breastfeeding and its benefits has been considered as one of the factors contribute into early cessation of exclusive breastfeeding (Bovell-Benjamin et al, 2001). A study carried out in Ndola, Zambia under PMTCT programme, reported that mothers who had received adequate counseling, exclusive breastfeeding rates rose from 56% to 76% (Sibanda et al; 2004).

Mothers who had knowledge regarding the importance of exclusive breastfeeding and were provided with adequate support they were likely to exclusive breastfeeding rather than those who had no information. Studies conducted in South Africa, Zambia and Zimbabwe among HIV infected and HIV uninfected mothers indicated that consistent messages and high quality of counseling improved adherence and longer duration of exclusive breastfeeding up to six months (WHO, 2006). Mother's beliefs and attitudes towards exclusive breastfeeding can affect exclusive breastfeeding either negatively or positively. A study conducted in Nigeria reported that 75% mothers believed that breastfeeding could not go beyond the first one year (Salami, 2006).

2.2.3 Social-Cultural factors

There are many traditional and cultural practices associated with infant feeding practices in the community, undesirable practices should be discouraged and desirable practices should be promoted. In many communities, due to cultural beliefs and practices infants are given fluids or water a few days after delivery. It is recommended by UNICEF and WHO that, initiation of breastfeeding should take place immediately after delivery. In some areas, the initiation of breastfeeding is commonly delayed and this is linked with the practice of giving various foods and fluids in the first days of life, commonly known as pre-lacteal feeds (WHO 2001). A recently cross sectional study on infant feeding practices conducted in Uganda found that 57.1% of the infants were given pre-lacteal feeds within the first three days, and the most common were the water based liquids (Engelbrechtsen et al, 2007). The main reason for giving pre-lacteal feeds was that they had



to wait until the milk started flowing. Other reasons included pre-lacteals had to do with the baby being hungry, cleaning of the baby's throat, her own pain and exhaustion after delivery, traditions and advice from health staff. Three studies conducted in Tanzania Morogoro, Igunga, and Kilimanjaro found that the practice of giving infant pre-lacteal feeds were common practice (Shirima et al, 2001, Agnarsson et al, 2001, de Paoli et al, 2001). The main reasons for giving pre-lacteal feeds to their infants included: mothers did not have milk, babies were thirsty or hungry and for cleansing the baby's stomach. The most common pre-lacteals given to the baby were water, herbs and teas. These pre-lacteal feeds when given in large quantities interfere with milk production and reduce the desire for the infant to suckle from the breast (Sachdev et al, 1991). Such feeds can also be a source of contamination when handled in unhygienic conditions. Giving pre-lacteal feeds or supplements increase the risk of infection and reduce the frequency of breastfeeding practice particularly exclusive breastfeeding (WHO 1996). Early initiation of breastfeeding stimulate mother's to produce the first milk quickly known as colostrum. Providing pre-lacteal feeds inhibits a baby from receiving adequate protection from the colostrum. Colostrum contains a high concentration of immunoglobulins, which has a protective role against viral and bacterial pathogens in the gut (Kengne et al, 2007). In some communities, people believed that, colostrum is not good to their baby as result it is either discarded or expressed before being given to the baby. A study conducted in Nigeria on socio-cultural factors on exclusive breastfeeding indicated that colostrum is discarded because it is dirty, "like pus", and therefore potentially harmful to the infant (Davies-Adetugbo 1997). A study conducted

in Morogoro, Tanzania found that 43% of mothers in the rural area were discarding colostrums (Shirima et al, 2001). However, reasons for discarding colostrums were not studied as well as how it affects exclusive breastfeeding.

According to Kakute et al, 2005 who conducted study in Cameroon to examine cultural barriers to successful exclusive breastfeeding found that mothers were influenced to practice mix-feeding due cultural and traditional reasons. These included; 1) pressures by village elders and families to supplement because it is a traditional practice, 2) breast milk is an incomplete food that does not increase the infant weight, 3) Infant as a new family members therefore should receive the benefit of food grown in the family farm, and 4) taboos which prohibits sexual practices during breastfeeding.

2.3 Support provided to the mothers during breastfeeding

2.3.1 Family and community

Mothers should have access to skilled support from health worker to help them initiate and sustain appropriate feeding practices, and to prevent difficulties as well as to overcome them when they occur (WHO/UNICEF, 2003). On the other hand family and community support group have a role in supporting mothers to breastfeeding for a long duration. Practically all mothers can breastfeed exclusively provided that they have accurate information, and given support from their families, communities and from the health care system. Study conducted in Morogoro Tanzania on early infant feeding practices found that, maternal mothers and health professionals, husbands, village health workers and traditional birth attendants had an influential role in child feeding practice

(Shirima et al, 2001). WHO, 2003 pointed out that, where fathers provided support and companionship as family providers and caregivers there was improvement of breastfeeding practices. Study conducted in Nigeria on the influence of social support on the duration of breastfeeding found that, husbands support had significantly increased the total duration of breastfeeding but the female support had a significant influence on both total duration of breastfeeding and the exclusive breastfeeding practices (Olayemi et al, 2007). A cross-sectional study conducted in China Hong Kong investigating factors influencing decision to breastfeed among primipara women, indicated that mother's knowledge and attitudes with husband's support were important factors influencing infant feeding choice (Kong et al, 2004). Another study conducted in Mexico which involved 165 women from low income urban found that full breastfeeding up to four months postpartum was consistently associated with support and approval from male partner or mothers- mother (WHO 1996). Community interventions using peer counselors and community support groups to encourage exclusive breastfeeding has been highly effective in many parts of the world. A study conducted in the Gambia, which trained village support groups for the purposes of supporting lactating mothers with accurate information and helping with correct breastfeeding technique found out that 95% of the studied mothers breastfed exclusively for 4 months as opposed to 3% at the baseline study (Semega- Janneh et al, 2001).

2.3.2 Health workers support

Mothers often get a lot of misinformation from various sources. Health workers can be a primary source of accurate and helpful information. In some societies, health workers recommendations and information are highly valued by mothers and they often take their recommendations as the final word (Shirima et al, 2001). Therefore the health workers need to have adequate knowledge and skills in infant feeding to be able to help mothers to effectively breastfeed exclusively. According to Kramer et al, (2001) and Nita et al, (2003) they reported that adequate support and training of health care professionals has shown improvement in exclusive breastfeeding practices.

2.4 Place of delivery and breastfeeding practices

Exclusive breastfeeding is also associated with the place where the mother delivered. A cross sectional study conducted in Uganda in Rakai district and Ghana showed that exclusive breastfeeding was significantly associated with delivery at hospital (Ssenyonga et al, 2004 and Aidam et al, 2005). Another study conducted in Guatemala City on determinants of optimal breastfeeding indicated that early initiation of breastfeeding was significantly associated with place of delivery (Dearden et al, 2002). In that study it was found that children born at home and Ministry health centres were significantly earlier to initiate breastfeeding than those born at private hospitals

2.5 Breastfeeding problem management

Positioning of the baby's body to the breast is important for good attachment and successful breastfeeding. The most important factor in preventing sore nipples and

ineffective feeding is the way that the baby is positioned and attached to the breast. Hogan (2001) found that lack of knowledge about breastfeeding management skills and supports for breastfeeding were the main barriers to long-term breastfeeding in Nova Scotia. Sheehan et al. (2001) investigated breastfeeding outcomes in Ontario, Canada and reported that perceived inadequate milk supply, difficulty with breastfeeding and sore nipples were the main reasons for switching to formula feeding at one month after birth. Cernadas et al. (2003) examined maternal and perinatal factors influencing the duration of exclusive breastfeeding among mothers in Buenos Aires, Argentina; found that appropriate suckling techniques and absences of nipple problems were significantly associated with longer duration of exclusive breastfeeding. Most difficulties with breastfeeding are due to restricted feeding time, lack of confidence or poor attachment of the baby at the breast. The most common results are an unsettled, hungry and angry baby (who may eventually refuse the breast), breast engorgement, and possibly blocked milk ducts and diminished milk production (WHO 1996). Helping mothers to avoid these problems could greatly increase the numbers who continue to breastfeed past the early weeks. A community based peer counselors for support of exclusive breastfeeding conducted in Uganda found that many mothers had problems with positioning and attaching their babies at the breast (Nankunda et al, 2006). The same study identified common breastfeeding problems were cracked nipples, breast engorgement, and mastitis.

CHAPTER THREE

3.0 METHODOLOGY

3.1 Study Area

The study was conducted in Kibaha district, which is one of the six districts of the Coast region. The district headquarter is located 40 km west of Dar es Salaam, and it is situated along the Dar -es Salaam - Morogoro highway. The district lies between latitude 6.8° in the South and longitude 38.2° and 38.5° in the East. Kibaha district shares common borders with Bagamoyo district in the North, with Bagamoyo district and Morogoro Rural District in the West and with Kisarawe district in the South. According to the national population census 2002, the district has a total population of 132,045 of whom 66,291 males and 65,754 females with 30,477 households (NBS 2002). The district has a mixture of five main tribes and immigrants from Kilimanjaro region.

The district has three divisions and ten wards. The wards are further sub-divided into villages for the rural areas and streets for the urban areas. The district has a total of 44 public health facilities which owned by government or private. These include 1 hospital, 5 health centers and 38 dispensaries.

3.2 Study Design

This was a descriptive study and cross-sectional in design and was conducted in July 2008 in Kibaha district, Coast region.

3.3 Study population

The primary target was all mothers with infants aged 0-6 months regardless of whether they were breastfeeding or not. All of them were selected within the study area.

3.4 Sample Size

The sample size was calculated using the formula shown below:

$$n = \frac{z^2 p(1-p)}{\epsilon^2}$$

Where,

n = the desired sample size

Z = (1.96)² Confidence interval 95%

ε = marginal error (6%)

p = 41% current proportion of lactating mothers breastfeeding exclusively (TDHS 04/05)

Substituting these figures in the above formula gives the minimum sample size of 258

+10% of non-response = 284 subjects

3.5 Sampling procedures

Coast region was selected for logistical reasons being relatively accessible from Dar-es-Salaam city. Of the six districts in Coast region, Kibaha was selected for its high prevalence rates of malnutrition for under fives which accounted for 44% stunting and 16% underweight (IMCI report, 2004). Two divisions out of three divisions were purposively selected (Kibaha and Mlandizi). Thereafter the multistage sampling

techniques were employed to obtain the required sample size of 284 mothers. The sampling procedures were performed as follows;

The first stage was the selection of wards. The number of wards was obtained from the district administrative secretary, whereby a list of wards (sampling frame) was prepared. Out of 10 wards from the two divisions, two wards (Maili moja and Mlandizi) were randomly selected using simple random sampling techniques (Appendix 2). **The second stage was selection of villages/streets.** From the two selected wards a list of villages and streets was prepared. Two villages (Mlandizi A and Mlandizi B) from Mlandizi and 2 streets (Maili moja and Tangini) from Maili moja ward were randomly selected. Administratively, Mlandizi ward is located in rural area; therefore four hamlets were randomly selected from each village (Janga, Mlandizi kati, Njia panda JKT and Mlandizi mjini). **The third stage was the selection of ten-cell leaders.** From each selected streets/ hamlets, a list of ten-cell leaders was prepared and a desired number of ten-cell leaders was randomly selected. **The fourth stage was selection of eligible households.** With assistance of the village health workers, all households which had mothers with singleton infants aged 0-6 months in each selected ten- cell was identified and included in the survey. For those households with two eligible participants both mother were enrolled in the study due to the fact that the breastfeeding practices differ from one individual mother within the same household.

3.6 Data Collection Procedure

3.6.1 Recruitment and training

Five research assistants who hold university degree with previous experience in community surveys were recruited for one day. The training was focused to the concepts of breastfeeding, objectives and general purpose of the study, structure and data collection technique. The research assistants were also reminded about interviewing techniques. The team comprised two nutritionists, two sociologists and one educationist.

3.6.2 Pre-testing of the study tools

The data collection tool was pre-tested in Kisarawe ward which is in Kisarawe district. The district was selected for pre-testing because the main inhabitants are from the Zaramo tribe which also dominated in the study area and this tribe has the same cultural background. A total of twelve mothers with children aged 0-6months were interviewed. The purpose of the pre-testing was to verify whether the tool would be adequate to collect the desired information as well as ensuring consistence of the questions. In the process of pre-testing, problematic areas were identified and the necessary modifications were done before embarking on the main study.

3.6.3 Data collection

The data was collected by five research assistants and the Principal Investigator. Data was collected using structured questionnaires with open and closed ended questions. The tool was prepared in English and translated in Kiswahili. Supervision was done

everyday in the field to ensure accuracy and completeness of the questionnaires. Data collection was carried out daily except for Sundays. Interview sessions took approximately 10-15 minutes and data collection was conducted for two weeks.

3.7 Study variables

The study variables included; socio-demographic information of mothers, place of delivery, mode of delivery, mothers level of knowledge on exclusive breastfeeding and feeding practices (Appendix 1)

3.8 Definition of terms

Exclusive breastfeeding

Infants who receive only breast milk, without addition of any solid or liquid foods including water, with the exception of medicine, vitamins and minerals.

Pre-lacteal feeding

Any food or drink given to a newborn baby before start breastfeeding

Mixed feeding

Feeding infant both breast milk and other foods or liquids

Colostrums

The thick, yellow milk secreted by the breasts during the first few days after delivery

3.9 Data Processing and Analysis

Manual editing of the questionnaires was performed every evening after the field work by the research team, for the purposes of minimizing unintended omissions and identification of any inconsistencies.

The questionnaires were given serial numbers before data entry. Data capture was developed using computer software SPSS 15.0 version (Statistical Package for the Social Sciences). Data were entered and cleaned for inconsistencies, incorrect values and double entries before analysis was done. Analysis was done by using the same SPSS 15.0 version. Descriptive statistics (frequencies and percentages) were calculated to give characteristics of variables. Cross tabulation to determine relationship between certain variables and exclusive breastfeeding practices was performed; Chi Square test was used to compare proportions and P-value was used to interpret the significance of the statistical tests at α level of 5%. Binary logistic regression was done to identify which factors predicted mothers continuing to breastfeed exclusively. Outcome data were combined for use in a logistic regression model to explore which factors predicted mother to practice exclusive breastfeeding. Mother's status on exclusive breastfeeding was the outcome of interest (dependent variable), adjusted for marital status, maternal occupation, education, age of the mother and any supported information on breastfeeding given to the mothers

Mother's knowledge on exclusive breastfeeding was assessed using series of six questions. Correct answers were given a score of one while the wrong answers were credited as 0. The maximum scores were eight points and the lowest score was one. Mothers with one to two points were categorized as having low knowledge; three to four were considered to be moderately knowledgeable and five to seven points were highly knowledgeable.

3.10 Ethical Considerations

Approval of the study was granted by the Directorate of Research and publications committee of Muhimbili University of Health and Allied Sciences. Permission to conduct the study was obtained from the Regional Administrative Secretary for Coast region, Kibaha District Administrative Secretary, Ward Executive Officer, and Village/street leaders. The mothers' consent was sought and obtained after the aims and objectives of the study had been explained to them.

CHAPTER FOUR

4.0 RESULTS

4.1 Socio-demographic characteristics of the study population

The study participants were 284 lactating mothers with infants aged 0 to six months; with high participation rates and no cases missed the interview. The mean age was 25.1 (\pm SD 5.7) years, ranging between 17 to 47 years. The socio-demographic characteristics of respondents are summarized in the table 1 below. Over half of the babies 162 (57%) were less than 4 months old and the rest 122 (43%) were 4 months or older. There were slightly more male babies than female babies, 148 (52.1%) compared to 136 (47.9%) as shown in the Table 1. The age of infants was obtained by recording complete months from the child's health monitoring card.

4.2 Information on place of delivery, mode of delivery and antenatal attendance

Table 2 shows that more than half of the mothers delivered in the hospital and 87.7% mothers had normal vaginal deliveries. Of those deliveries, 259 (91.2%) were conducted by nurses or doctors, 10 (3.5%) by village health workers, 10 (3.5%) by the family members and the remaining 5(1.8%) conducted by Traditional Birth Attendants (TBA) and others. It was found that only two (0.7%) mothers out of 284 interviewed did not attend antenatal clinic

Table 1: Frequencies of socio-demographic factors of respondents in Kibaha district, Coast region, 2008

Characteristic	No. of women N=284	Percentages
Maternal Age (years)		
<20	68	23.9
20-24	83	29.2
25-29	71	25.0
32+	62	21.8
Marital status		
In union (living together)	192	67.6
Not in union	92	32.4
Education		
No formal	27	9.5
Primary	221	77.8
Secondary +	36	12.7
Occupation		
Employed	20	7.0
Self employed	107	37.7
Housewife	157	55.3
Religion		
Christians	92	32.4
Muslims	192	67.6
Age of infants (months)		
< 4 months	162	57
> 4 months	122	43
Sex of infants		
Male	148	52.1
Female	136	47.9

Table 2: Frequencies of place of delivery, mode of delivery and antenatal attendance of respondents in Kibaha district, 2008

Characteristic	No. of women N=284	Percentages
Place of delivery		
Hospital	163	57.4
Health centre/dispensary	105	37
Home	15	5.3
Others	1	0.4
Mode of delivery		
Normal vaginal	249	87.7
Caesarean	26	9.2
Antenatal attendance		
Yes	282	99.3
No	2	0.7

4.3 Feeding practices in Kibaha district

The study findings revealed that (281)98.9% of the interviewed mothers were breastfeeding their babies, indicates that breastfeeding is universal practice and culturally accepted in the district. Only two of the mothers questioned had not ever breastfed mainly due to reported of being sick and they were advised by the doctor. While the other one was not breastfeeding because her baby had refused to breastfed.

About 10.9% of the infants were given pre-lacteal feeds within the first day and warm water was the most common liquid offered to the infants. The main reason the mothers

reported for giving pre-lacteal feeds was that they had insufficient milk and they had to wait until milk started flowing. On the other side (12) 4.2% of the newborns were not given yellowish milk (colostrums). Of those mothers who were not offering colostrums to their babies thought that it was dirty and not good for their babies and others thought it was not important for their babies.

More than half of the mothers (146) 51.4% initiated breastfeeding within one hour after delivery while (136) 47.9% of mothers had delayed in initiating breastfeeding (Table 3). The main reasons the mothers reported for delaying initiation of breastfeeding were: mothers had delivered by operation, mothers were sick, there was a delay in milk secretion and baby was sick or premature baby.

4.3.1 Exclusive breastfeeding status among the infants in the district

The study results show that by the age of 5 months only 13.3 % of the infants were exclusively breastfed. The rate of exclusive breastfeeding decreases with the increasing age of the infants (table 4). At the age of two months majority of mothers (93%) started mixed feeding their infants.

Table 3: Frequencies of feeding practices of infants in Kibaha district, 2008

	Frequency	Percentages
Breastfeeding History=284		
Ever breastfed	281	98.9
Not breastfed	3	1.1
Giving pre-lacteal feeds=282		
Yes	31	10.9
No	251	88.4
Feeding colostrums=282		
Yes	270	95.1
No	12	4.2
Initiation of breastfeeding=282		
Immediately	146	51.4
Delayed	136	47.9
Breastfeeding status=281		
Exclusive breastfeeding	51	18.1
Mixed feeding	230	81.9

4.3.2 Mixed feeding practices

It was found that (230) 81.9 % of infants were given fluids or foods when they were at very young age. At the age of less than one month 60% of infants had already received a certain type of food or drink (table 3). It was found that the main type of foods or drinks which were reported to be offered to the infants included; water 79.6%, thin porridge

45.4%, fruit juices 20.8%, cows' milk 15.8%, mashed potatoes/bananas 6.3%, tea 4.6%, and infant's formula milk 2.1%.

Table 4: Proportion of infants currently breastfed exclusively and mixed fed by age in Kibaha district, 2008

Age of infants (in months)	Exclusive breastfeeding (n=51)		Mixed feeding n=230		Total
	N	%	N	%	
	0	16	40.0	24	
1	12	31.6	26	68.4	38
2	3	7.3	38	92.7	41
3	10	23.8	32	76.2	42
4	6	15.0	34	85.0	40
5	4	13.3	26	86.7	30
6	0	0.0	50	100	50
Total	51	18.1	230	81.9	281

4.3.3 Reasons for early complementation given by mothers in Kibaha district

The commonest reasons reported by the mothers for mixed feeding babies were: baby crying too much (98) 42.6%, insufficient breast milk (45)19.6%, thought it was the right age for complementation (28)12.2%, infant feeling thirsty (26) 9.2%, mothers return to work (6) 2.6% and constipation (5) 1.8%.

4.3.4 Influence on mother's decision to practice mixed feeding

It was clearly shown that of 230 mothers who were practicing mixed feed, 124(53.9%) were not influenced by any person. They made their own decision on how to feed their infants. While 45 (19.6%) were influenced by their in-laws/maternal mothers, 28 (12.2%) by health workers, 16 (7%) friends, 11(4.8%) grandmothers, others 5 (2.2%) and 1 (0.4%) traditional birth attendants.

4.3.5 Source of exclusive breastfeeding information

It was found that health service providers 93 (80.2%) were the main source of information about exclusive breastfeeding to the mothers, other people 9(7.8%), radio/TV/magazines 6(5.2%), relatives/friends 6(5.2%) and only 2 persons (1.7%) had heard from the village health worker.

4.4 Association between socio-demographic characteristics of the mothers and feeding practices (exclusive breastfeeding and mixed feeding)

Table 5 shows that mothers aged 20-24 years were more likely to practice exclusive breastfeeding compared to the other age groups. Married mothers or mothers living with partners 41(21.6%) were likely to breastfed their infants exclusively while mothers who had secondary education and above 10 (29.4%) were likely to breastfed their infants exclusively. It was also found that mothers employed in the formal sector 9(47.4%)

were likely to practice exclusive breastfeeding. However, only marital status and occupation were significantly associated with the practice of exclusive breastfeeding.

4.5 Association between place of delivery and infant feeding practices

It was revealed that mothers who had delivered at hospital were likely to practice exclusive breastfeeding 21% compared to those delivered outside the health facility. However place of delivery was not significantly associated with exclusive breastfeeding (table 6).

Table 5: Distribution of feeding practices by socio-demographic characteristic of the mother in Kibaha district, 2008

Mothers Characteristics	Exclusive breastfeeding		Mixed feeding		Total	Significance
	N=51		N=230			
	n	%	n	%		
Age group (years)						
<20	10	14.7	58	85.3	68	$\chi^2=2.1$
20-24	19	23.2	63	76.8	82	P =0.5
25-29	12	17.1	58	82.9	70	df=3
30+	10	16.4	51	83.6	61	
Marital status						
In union(living together)	41	21.6	149	78.4	190	$\chi^2=4.6$
Not in union	10	11.0	81	89.0	91	P =0.03 df=1
Education						
No formal	4	15.4	22	84.6	26	$\chi^2=3.33$
Primary	37	16.7	184	83.3	221	P =0.2
Secondary+	10	29.4	24	70.6	34	df=2
Occupation						
Employed	9	47.4	10	52.6	19	$\chi^2=12.14$
Self employed	19	17.9	87	82.1	106	P =0.002
Housewife	23	14.7	133	85.3	156	df=2
Religion						
Christians	19	21.1	71	78.9	90	$\chi^2=0.8$
Muslims	32	16.8	159	83.2	191	P=0.4

Table 6: Relationship between place of delivery and infant feeding practices in Kibaha district, 2008

Place of delivery	Exclusive breastfeeding N=51		Mixed Feeding N=230		Total	Significance
	n	%	n	%		
Hospital	34	21.3	126	78.8	160	$\chi^2=2.43$
Health centre	15	14.3	90	85.7	105	P=0.2
Others	2	12.5	14	87.5	16	df=2
Total	51	18.1	230	81.9	281	

4.6 Association between mothers level of knowledge on exclusive breastfeeding and their feeding practices

Mothers with high knowledge of exclusive breastfeeding were twice likely to practice exclusive breastfeeding of their infants than mothers with moderate or low levels of knowledge (table 7). There was a statistically significant association between mothers' level of knowledge and practice of exclusive breastfeeding.

Table 7: Association between mothers' level of knowledge on EBF and feeding practices among lactating mothers in Kibaha district, 2008

Mothers level of knowledge	Exclusive breastfeeding N=51		Mixed feeding N=230		Total	Significance
	n	%	n	%		
Low	15	14.7	87	85.3	102	$\chi^2=10.1$ P=0.006 df=2
Moderate	16	13.8	100	86.2	116	
High	20	31.7	43	68.3	63	
Total	51	18.1	230	81.9	281	

4.7 Relationship between mothers level of knowledge on EBF and time of initiation of breastfeeding among the mothers

Mothers with high knowledge of exclusive breastfeeding 63.5% initiated breastfeeding immediately after delivery. However, mothers with low and moderate knowledge delayed in initiating breastfeeding. Mother's level of knowledge on exclusive breastfeeding was not statistically significant with time of breastfeeding initiation (table 8).

Table 8: Association between mothers' level of knowledge on exclusive breastfeeding and initiation of breastfeeding, 2008

Mothers level of knowledge	Breastfeeding initiation N=282				Total	Significance
	Immediately		Delayed			
	n	%	n	%		
Low	51	49.5	52	50.5	103	$\chi^2=4.5$
Moderate	55	47.4	61	52.6	116	P=0.1
High	40	63.5	23	36.5	63	df=2
Total	146	51.8	136	48.2	282	

4.8 Social support on breastfeeding issues

The results shows that out of 284 mothers interviewed only 106 (37.3.9%) responded that someone had spoken to them about breastfeeding issues when they were pregnant for the current baby. Forty two (39.6%) mothers were told about the benefits of breastfeeding, 36 (34.0%) were told about positioning and attachment, 36 (34.0%) were told to breastfed their infants on demand and 21 mothers were told about other issues related to breastfeeding management. Most of breastfeeding information provided to the mothers was mainly from doctors or nurses which were 96 (90.6%), and 10(9.4%) provided by village health workers and family members respectively. About 124 (44%) of the respondents were shown how to breastfeed their babies. Among them 95(76.6%) mothers were shown how to position their babies to the breasts, 26 (21%) were shown on proper attachment of babies to the breasts and 3(2.4%) were shown others breastfeeding issues. It was also found that proper position and attachment shown to

mothers were mainly done by doctors/nurses 77 (62.1%), followed by family members 41(33.1%) and 6(2.2%) by village health workers and other people.

4.9 Association of social support on breastfeeding and the infant feeding practices

It was found that out of 103 mothers who had received breastfeeding information only 30.1% of them were practicing exclusive breastfeeding (table 9). There was a statistically significant association between receiving breastfeeding information and practice of exclusive breastfeeding. This implies that breastfeeding information should be imparted to pregnant or lactating mothers for them to make appropriate decision in feeding their babies It was also found that 22.6% of mothers who were shown how to breastfed their infants were practicing exclusive breastfeeding. However, shown how to breastfed was not statistically significantly with exclusive breastfeeding feeding practices.

Table 9: Relationship between breastfeeding social support and feeding practices feeding in Kibaha district (n=281), 2008

Variable	Exclusive breastfeeding		Mixed feeding		Total	Significance
	n	%	n	%		
Has supported with BF information						
Yes	31	30.1	72	69.9	103	$\chi^2=15.6$, df=1, p=<0.01
No	20	11.2	158	88.8	178	
Total	51	18.1	230	81.9	281	
Shown how to BF						
Yes	28	22.6	96	77.4	124	$\chi^2=2.9$, df=1, p=0.08
No	23	14.6	134	85.4	157	
Total	51	18.1	230	81.9	281	

4.10 Barriers associated with exclusive breastfeeding practices

4.10.1 Breasts problems and management

Out of 282 mothers interviewed, 37 (13.1%) had experienced breast problems. The common problems were painful nipples 9(24.3%), abscesses 8 (21.8%) and breast

engorgement 7 (18.9%). Other problems were cracked nipple 3 (8.1%) and mastitis 2 (5.4%). Three (8.1%) of mothers experienced other problems like fungus. It was found that among those who had experienced breast problems 10 (27%) stopped breastfeeding as a way of managing the problem, 9 (24.3%) breastfed frequently, 6 (16.2%) massaged with warm water and 3 (8.1%) expressed milk. The remaining 9 (24.3%) mothers did nothing.

4.10.2 Association between breasts problems and exclusive breastfeeding practices

As shown on Table 10, mothers who had breast problems were not likely to breastfeed exclusively. However, there was no significant association between mothers with breast problems and their feeding practices

Table 10: Relationship between mothers who had experienced breast problems and their feeding practices in Kibaha district, 2008

Breast problem	Exclusive breastfeeding		Mixed Feeding		Total	Significance
	n	%	n	%		
Yes	5	13.5	32	86.5	37	$\chi^2=0.6$
No	46	18.9	198	18.1	244	P=0.4
Total	51	18.1	230	81.9	281	df=1

4.11 Reasons that hindered mothers not to breastfeed their babies exclusively

All 284 mothers were asked to give reasons which they thought to be hindrances for lactating mothers to practice exclusive breastfeeding for the six months. It was found that 117 (41.2%) mothers mentioned insufficient milk as a main constraint to exclusive breastfeeding, followed by 60(21.1%) lack of breastfeeding information, 26 (9.2%) heavy workload, 10(3.5%) short maternity leave and 17(6%) mentioned traditional beliefs. Others 10 (3.5%) thought that the baby might be feeling hungry, 8(2.8%) baby may cry excessively, and 7 (2.5%) mother may sick. However, 52(18.3%) mothers were not able to mention any reason.

4.12 Factors which predicting mothers to practice exclusive breastfeeding

The final model on binary logistic regression is summarized in Table 11 below. The factors that remained statistically significant in the model which were associated with

exclusive breastfeeding were: mothers who were employed in the formal sector and mothers who were supported with breastfeeding information. It was found that mothers employed in the formal sectors were more than three times likely to practice exclusive breastfeeding than housewives (OR = 3.9, 95% CI =1.3-12.3), independent of other factors. Furthermore mothers who were supported with any breastfeeding information were almost three times as likely to practice exclusive breastfeeding compared to those who were not supported (OR = 3.3, 95% CI =1.6-6.6).

Table 11: Logistical regression analysis results – Factors associated with exclusive breastfeeding

Factor	n	Odds Ratio	(95%CI)	P value
Marital status				
In union (living together)	190	2.2	0.9-4.8	0.05
Not in union	91	1		
Occupation				
Formal employed	19	3.9	1.3-12.3	0.02
Not formal employed	106	1.2	0.6-2.5	0.6
Housewives	156	1		
Education				
No formal	26	1.6	0.4-7.2	0.5
Primary education	221	1.0	0.4-2.7	0.9
Secondary+	34	1		
Age				
<20	68	1.5	0.5-4.4	0.5
20-24	82	2.2	0.8-5.6	0.1
25-29	70	1.6	0.6-4.5	0.3
30+	61	1		
Has supported with any BF Information				
Yes	103	3.3	1.6-6.6	0.001
No	178	1		

CHAPTER FIVE

5.0 DISCUSSION

Exclusive breastfeeding has fundamental nutritional benefits for the child survival, growth, and development. Exclusive breastfeeding for the first six months of life confers important benefits on the infant and the mother. It protects infants against common childhood diseases, including repeated gastrointestinal infections and pneumonia, which are the major causes of childhood mortality (WHO 2003). The WHO/UNICEF Global Strategy (2003) which adopted by the Ministry of Health and Social Welfare recommended that infants should be exclusively breastfeed for the first six months. Therefore, exclusive breastfeeding practice and associated factors should be known, so that policy makers can use that information in designing and planning appropriate interventions.

The study findings showed that breastfeeding is almost universal with 98.9 % mothers' breastfeeding their infants. This has been also reported in the previous studies conducted in Tanzania and other parts of Africa (TDHS 04/05, Shirima et al 2001, de Paoli et al, 2001 and Engebresten 2007). Despite of the universal breastfeeding, the proportion of infants who were exclusively breastfeed was only 18.1% which is below the current national exclusive breastfeeding rate of 41% and it is far from the rate recommended by WHO and UNICEF. This shows that exclusive breastfeeding is not a common practice. However, this finding conform with other studies conducted in Tanzania and other parts

of Africa which found that exclusive breastfeeding is rarely practiced (de Paoli 2001, Shirima et al 2001, Kulwa et al, 2006, Sibanda et al 2004, Salami, 2006). Different sampling and data collection procedures and the definition of exclusive breastfeeding adopted could produce such variations in EBF rates. This study had strictly adhered to the WHO definition of exclusive breastfeeding (WHO, 2004).

The Baby Friendly Hospital Initiative is discouraging the use of pre-lacteal feeds by the infants because it limits the frequency of suckling and exposes the baby to the risk of infection. Findings from other studies have shown that pre-lacteal feeding particularly water was common practices in rural area (Agnarsson et al, 2001, de Paoli et al, 2001, Shirima et al 2001, TDHS 04/05, Engebresten et al, 2007). The findings do not conform to the above mentioned statement, because data shows that only 10.9% of the infants were offered pre-lacteal feeds and warm water was the most common drinks offered to the infants. These remarkable changes might be due to the existence of the infant feeding programs in the district particularly Prevention to Mother-Child-Transmission (PMTCT) and Community Integrated Management to Child Illness (IMCI). Both of the programs have component which promotes optimal breastfeeding practices.

Colostrums (the first breast milk) contain anti-infective properties that are essential in protecting infants against infections. In spite of the importance of colostrums to the infants, a study conducted in Tanzania has shown that 45% of infants were not given colostrums and mothers tend to discard it because they thought it is dirty (Shirima et al,

2001). In this study, only 4.2% of the infants were not given colostrums. Generally those mothers who did not offer colostrums to their infants were mainly mothers whose age was less than 20 years who accounted for (7) 10.3 %. Even though the mothers were few, still yet a strategy is needed to ensure all infants in the community get colostrums. Therefore, there is a need to empower mothers at different settings for optimal breastfeeding practices.

The Baby Friendly Hospital Initiative (BFHI) promotes early initiation of breastfeeding, preferably within the first hour after delivery. Recent findings have emphasized the risk of delayed onset of breastfeeding on neonatal mortality in a sub-saharan setting. It was demonstrated that neonatal mortality could be reduced by 16% if mothers started breastfeeding at day one and 22% if they started within the first hour (Edmond et al, 2006). Findings in this study have shown that 47.9% of mothers delayed in initiating breastfeeding after delivery. A study conducted in Morogoro Tanzania reported similar findings (Shirima et al, 2001). Such delays might have a negative impact on milk production; leading to increased chances of introducing pre-lacteal feeds especially water to the baby and might contribute to neonatal mortality. Some of the reasons given by mothers for a delay in initiation were due to absence of milk caused by a delay in milk secretion, mothers or child being sick and mothers who had a caesarian section delivery. A delay in secreting breast milk could have been corrected by putting the baby on the breasts soon after the mother gets well.

The WHO/UNICEF Global Strategy (2003) recommended that infants should be exclusively breastfed for the first six months, and after the six months the infant should be given appropriate complementary foods. However, early complementation has been demonstrated in many parts of sub-saharan Africa including Tanzania (Coovadia et al 2007, Coutsooudis et al, 1999). Findings in this study showed that at the age of two months 93% of infants had already received a certain type of food or drink. Early introduction of other foods or drinks is a concern because it marks the end of exclusive breastfeeding with its protective effect. On the other hand early complementation might expose infants to a high risk of contracting infections particularly diarrhoeal diseases especially when foods were prepared and fed in unhygienic condition. In addition, this practice of mixed feeding is dangerous especially during this era of HIV infection as it increases the risks of MTCT. According to Coutsooudis et al, 1999 in a study on the influence of infant feeding patterns on early mother-to-child transmission of HIV-1 in Durban, South Africa, the authors found that children who were exclusively breastfed for at least three months were less likely to be infected than those receiving mixed feeding before three months (Coutsooudis et al, 1999).

Studies conducted in Africa revealed that there is an influential role on infant feeding decisions (Semega-Janneh 2001). Findings from this study revealed 43.7% of mothers made their own feeding decision on mixed feeding without being influenced by any person. A study conducted in Chicago reported similar findings (Hannon et al, 2000). This suggests that so long the mothers are able to make decisions; there is a need to

empower them to make informed decision on infant feeding practices. Moreover, there is a need to conduct in-depth qualitative research to obtain their views regarding the best way to address infant feeding issues in the community. Moreover, intensive education on breastfeeding should be organized with the aim of empowering all community members' particularly older mothers who tend to influence the young mothers to mix feed their infants.

In this study maternal age was not statistically significantly associated with exclusive breastfeeding. This finding differs to those of Hornell et al, (2001) who reported that young mothers were less likely to breastfeed exclusively than older mothers. The findings also differ with those by Lawoyin et al, 2001, Della et al, 2006, who reported that exclusive breastfeeding duration increases as the age of the mother's increases. Therefore it appears that the influence of maternal age on exclusive breastfeeding varies, depending on culture, access to information, and characteristics of the study population.

Our results showed that marital status was significantly associated with exclusive breastfeeding practices ($p=0.03$). Married or those women living in union were more likely to practice exclusive breastfeeding compared to single/divorced or widowed. These findings are also consistent with the results from other studies conducted in Africa and Tanzania (Ekure et al, 2003, de Paoli et al, 2001). This indicates that presence of spouses in the family might help in providing emotional and social support to women and ultimately influence exclusive breastfeeding practices. It was also noted

that in a situation where the father provided support and companionship to the women, breastfeeding practices were also improved (WHO 2003).

Results from this study showed that occupation was significantly associated with the practice exclusive breastfeeding ($p=0.002$). Formally employed women were more likely to practice exclusive breastfeeding compared to the other group category. Binary logistic regression also demonstrated that formally employed women were more likely to practice exclusive breastfeeding. The above findings have been reported in other studies (Lakati et al, 2002) who reported that working mothers continue to breastfed but the rate of exclusive breastfeeding was low. Ekure et al, 2003 also reported that paid employment with maternity leave were associated with exclusive breastfeeding. The findings are not similar to other studies conducted elsewhere in Africa which found that mothers could not breastfeed exclusively due to their nature of work (Alutu et al, 2005). However, employed mothers can breastfeed exclusively provided that they are supported by their employers and had favorable working environment (WHO 2003). In the studied areas majority of employed mothers were school teachers and military workers who resided close to their working place.

In the published reports, maternal education was found to be an effective way to improve EBF (Giashuddin et al, 2003). Unlike other studies, findings from this study showed that maternal education was not significant associated with exclusive breastfeeding practices. Other studies reported that mothers with higher education levels

were more likely to exclusively breastfeed than those with lower education levels (Hornell et al, 2001, Zekiye 2006). This might be due to the fact that in the study area majority of the respondents had attained primary education. In the Tanzanian context, people with lower education have a low seeking behaviour compared to those with higher education level. Therefore those with primary education might not have access to breastfeeding information provided in the antenatal clinic.

Knowledge of mothers on exclusive breastfeeding is an important factor for the mother to make an informed decision on infant feeding. Mothers level of knowledge on exclusive breastfeeding was significantly associated with the practice of exclusive breastfeeding ($p=0.006$). Mothers with high level of knowledge were likely to practice exclusive breastfeeding as compared to those with low and moderate levels of knowledge. Other studies conducted in other areas have reported similar findings (Davies-Adetugbo, 1997, de Paoli et al, 2001). Therefore appropriate exclusive breastfeeding knowledge should be imparted to the mothers in order to improve their breastfeeding practices. Furthermore, mother's level of knowledge on exclusive breastfeeding was not significantly associated with initiation of breastfeeding. In my view, for the mother to initiate breastfeeding immediately after delivery, it depends on the other factors such as place and mode of delivery. The ten steps of BFHI strategies need to be strengthened in the maternity hospitals in the country.

Social support for optimal breastfeeding can take various forms. The elements of social support relevant to breastfeeding are emotional, informational, and instrumental (Raj and Plichta, 1998). These elements translate in providing timely and appropriate information, practical skills and encouragement of optimal feeding practices. In this study information and instrumental support were taken into consideration, the findings showed that there was a statistically significant association between receiving breastfeeding information and the practice of exclusive breastfeeding ($p < 0.01$). Similar results have been reported by Sibanda et al, (2004) where the authors reported that adequate counseling on breastfeeding increased the exclusive breastfeeding rate from 56% to 76%. In a logistic regression analysis we also demonstrated that mothers who were supported with any breastfeeding information remained predictors for mothers to practice exclusive breastfeeding. However, the findings from this study were different from the other study conducted in Dhaka, Bangladesh where the authors reported that breastfeeding information given to mothers was not adequate, hence did not influence their exclusive breastfeeding practice (Haider et al, 2000). This difference might be due to the existence of PMTCT programs in the district, whereby health workers were trained on infant feeding issues.

It was also found that health service providers were mostly the source of exclusive breastfeeding information to the mothers. In this studied area majority of mother attended antenatal services. It seems that mothers had an opportunity to access information regarding exclusive breastfeeding practices which are provided at antenatal

clinic. Therefore there is a need to equip health workers with appropriate information as well as to sensitize mothers to attend antenatal clinic early.

Findings from other studies showed that exclusive breastfeeding was significantly associated with place of delivery (Ssenyonga et al, 2004, Aidam et al, 2005 and Dearden et al, 2002). The findings from this study, are not consistent with the previous studies conducted in Africa, which reported that exclusive breastfeeding practices was not significantly associated with the place of delivery. In this community there was low proportion of mothers who had delivered outside the health facility setting. However, a large percentage of exclusive breastfeeding practice was found in those mothers who had delivered at a hospital setting.

It is important to note that only (5) 13.5% who had breast problems were exclusively breastfeeding out of 37 mothers who reported to have breast problems. But there were no significantly association between breast problems and exclusive breastfeeding practices. The findings agree with another study done by McLeod et al, 2002 who reported that mothers were less likely to fully breastfeed if they had experienced breast problems. The common problems were painful nipple, abscess, engorgement, nipple crack and mastitis. Correct breastfeeding management such as proper position and attachment are likely to prevent breast problems and increase exclusive breastfeeding. Findings showed that there was poor breasts management. Therefore, there is a need to

provide practical skills for breast care to pregnant women and lactating mothers at antenatal and postnatal clinic

The findings also showed that mothers perceived that insufficient milk, had insufficient breastfeeding information, heavy workload, short maternity leave and traditional beliefs were the major constraints to exclusive breastfeeding. On the other hand they recommended that in order to improve exclusive breastfeeding practices the following should be done: provision of breastfeeding education to the mothers, improvement and provision of adequate diet for lactating mothers and increasing maternity leave for employed mothers. This calls for further research to assess eating habits, women's domestic work situation and how does it affect exclusive breastfeeding practices.

Limitations of this study were unable to explore the emotional support provided to the lactating mothers and how it influences exclusive breastfeeding practices. Cultural issues were not well identified and how it affects exclusive breastfeeding practices. Another limitation of this study was small number of study participants, therefore the results cannot be directly generalized to the greater Tanzanian community, and this was due to time and financial constraints

CHAPTER SIX

6.0 CONCLUSION AND RECOMMENDATIONS

6.1 Conclusion

Generally exclusive breastfeeding practice is rarely done in this community. Sub-optimal breastfeeding practices such as use of pre-lacteal feeds, delayed in initiation of breastfeeding and discarding colostrums is still persisting. Over half of infants are early complemented and majority of mothers made their own feeding decision on mix feeding without influenced by any person and majority of them have limited knowledge on exclusive breastfeeding.

Some socio-demographic characteristics such as age, marital status and occupation were significantly associated with exclusive breastfeeding practices. Social support especially information is among the factors which enable mothers to breastfed exclusively. Provision of adequate and consisted information of optimal breastfeeding practices should be provided to the mothers. In our community messages from health workers are highly valued; therefore there is a need to equip them with accurate information on exclusive breastfeeding. Existing programs in the community should be strengthened and evaluated for improved performance of exclusive breastfeeding. Exclusive breastfeeding practices remains a challenge particularly in the health sector, but extra efforts are needed to promote optimal breastfeeding practices in the country through involvement of other key stakeholders in the community.

6.2 Recommendations

Based on the above findings, the following recommendations can be made for improving exclusive breastfeeding practices

- The Ministry of Health and Social Welfare (MoHSW) in collaboration with Local Government and Non Government Organization should raise the knowledge on exclusive breastfeeding to the community and target women of reproductive age and older mothers.
- Local Government and Non Government Organization should develop educational materials for adolescent girls and women of child-bearing age and their families which are culturally appropriate and easily understood. The messages should address concerns about water requirements of infants, mothers' doubts about the adequacy of their breast milk and other issues.
- The Ministry of Health and Social Welfare (MoHSW) in collaboration with Local Government should strengthen breastfeeding education provided during antenatal and postpartum care and distribute leaflets on exclusive breastfeeding to the mothers attending antenatal clinics.
- Local Government in collaboration with other partners should consider developing community-based breastfeeding support groups: peer counselors, mother-to-mother support groups, and community education networks in the district.

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