COMPLIANCE WITH THE INTERNATIONAL CODE AND NATIONAL REGULATIONS OF MARKETING OF BREAST-MILK SUBSTITUTES AND DESIGNATED PRODUCTS IN TANZANIA

BY

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A DISSERTATION SUBMITTED IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE DEGREE OF MASTER OF SCIENCE IN FOOD SCIENCE OF SOKOINE UNIVERSITY OF AGRICULTURE. MOROGORO, TANZANIA.

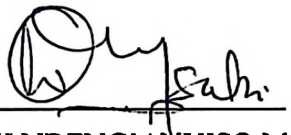
2010

ABSTRACT

A study to estimate prevalence of non-compliance with the WHO International Code and Tanzania National Regulations (NRs) for Marketing of Breast-milk Substitutes and Designated Products was conducted in seven selected health care facilities and 10 infant food retail outlets in Dar es Salaam and Morogoro urban centres. A multi-site cross-sectional questionnaire-based survey/interview was used. The study showed that both the NRs and the Code were violated in all health care facilities and retail outlets. Majority of health workers (87.8%) were not aware of the existence of the Code. Only 12.2% health workers across surveyed districts were aware of the NRs. Across the districts the health care service was the most common source (64%) of free or subsidized samples of Breast-milk Substitutes (BMS) received by pregnant women and mothers, in contravention of Article 7.4 of the Code. About three quarters (72.2%) of pregnant women and 61.1% mothers had not been counselled about infant feeding. It was found that 35 BMS and designated products violated one or more of the provisions of the Code and NRs. Over half (57.1%) of the products that violated the Code recommended inappropriate ages of introduction; 45.7% had no labelling information that the product should be used only on advice of health worker; 54.3% had no warning against health hazards of inappropriate use; 91.4% carried pictures, drawings, or text idealizing use of the product. The Government has an obligation to ensure that legislation is accompanied by effective awareness-raising, training, information, implementation and monitoring systems to guide practices of health professionals. Control of infant foods trade in the East African Community and Southern Africa Development Community needs to be harmonized and coordinated to enhance effective implementation of the Code and the NRs and subsequent improvement in infant and young child feeding practices in East Africa and Tanzania.

DECLARATION

I, OBADIAH NDENGANYISO MSAKI, do hereby declare to the SENATE of Sokoine University of Agriculture that this dissertation is my own original work and has neither been submitted nor being concurrently submitted for degree award in any other institution.



14/09/2010

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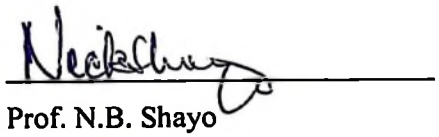

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ACKNOWLEDGEMENT

Firstly, I give thanks to the Lord Jesus for His loving-kindness, grace, tender mercies and guidance to me throughout my studies. I also wish to express my sincere gratitude for the encouragement I got from the Chairperson of the Tanzania Bureau of Standards (TBS) Board of Directors, Prof A.E. Pereka and to the TBS Management for the financial support and assistance I got throughout the study period. Special thanks should go to my supervisor, Prof N.B. Shayo of the Department of Food Science and Technology, of the Sokoine University of Agriculture for the directive and valuable constructive guidance, suggestions, corrections and encouragements during the whole period of the study. I also wish to express my appreciation to my wife, Mary, our children Reuben, Deborah and Neema, my mother Magdalena, my mother-in law Eda, my sister Damares, and my brothers for their encouragement, tolerance and for their painstaking endurance during long session of my absence from home.

I acknowledge the health workers from the hospitals and health centres in Dar es Salaam and Morogoro regions who were involved in the study for their good participation during my field study. My heart-felt thanks go to my friends and all colleagues who in one way or another supported and contributed to this study.

DEDICATION

This piece of work is dedicated to the LORD God my heavenly Father and my country.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF PLATES

LIST OF APPENDICES

ACRONYMS AND ABBREVIATIONS

AAP	American Academy of Paediatrics
AFASS	Acceptable, Feasible, Affordable, Sustainable and Safe
AIDS	Acquired Immunodeficiency Syndrome
ANC	Antenatal Care
BFHI	Baby Friendly Hospital Initiative
BMRB Ltd	British Market Research Bureau Limited
BMS	Breast-milk Substitutes
CAH	Department of Child and Adolescent Health and Development
CI	Consumers International
DHS	Demographic and Health Survey
EAC	East African Community
HCF	Health Care Facility
HIV	Human Immunodeficiency Virus
IASO	The International Association for the Study of Obesity
IBFAN Africa	International Baby Food Action Network Africa Region
IBFAN	International Baby Food Action Network
ICDC	International Code Documentation Centre
ICMBMS/Code	The International Code of Marketing of Breast-milk Substitutes
IDRC	International Development Research Centre
IOTF	International Obesity Task Force
IYCF	Infant and Young Child Feeding
LLC	Limited Liability Company
MCH	Maternal and Child Health

MDGs	Millennium Development Goals
MOH	Ministry of Health of Tanzania
MOHA	Ministry of Health of Albania
MOHSW	Ministry of Health and Social Welfare Tanzania
MOHU	Ministry of Health of Ukraine
MOPH	Ministry of Public Health, Republic of Lebanon
MOSA	Ministry of Social Affairs, Republic of Lebanon
NBS	National Bureau of Statistics
NICUs	Neonatal Infant Care Units
NRs	National Regulations
NZBA	New Zealand Breastfeeding Authority
ORC Macro	ORC Macro International Incorporation.
PAHO	Pan American Health Organization
PMCT	Prevention of Mother-to-child transmission of HIV
PMCT-1	Prevention of Mother-to-child transmission of HIV, testing seropossitive
QAP	Quality Assurance Project
SADC	Southern Africa Development Community
SDC	Socio-demographic Characteristics
SMC	Social Monitoring Centre
TACAIDS	Tanzania Commission for AIDS
TBAs	Traditional Birth Attendants
TBS	Tanzania Bureau of Standards
TDHS	Tanzania Demographic and Health Survey
TFDA	Tanzania Food and Drug Authority
TFNC	Tanzania Food and Nutrition Centre

TNSIYCN	Tanzania National Strategy on Infant and Young Child Nutrition
TRCHS	Tanzania Reproductive and Child Health Survey
TSPA	Tanzania Service Provision Assessment
UNAIDS	Joint United Nations Programme on HIVAIDS
UNDP	United Nations Development Programme
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNFPA	United Nations Fund for Population Activities
UNICEF	United Nations Children's Fund
URC	University Research Council
USAID	United States Agency for International Development
WB	The World Bank
WFP	World Food Programme
WHA	World Health Assembly
WHO	World Health Organization
ZAC	Zanzibar AIDS Commission

CHAPTER ONE

1.0 INTRODUCTION

1.1 Background Information

The World Health Organization (WHO) International Code of Marketing of Breast-milk Substitutes (ICMBMS/Code) is a set of recommendations to regulate the marketing of BMS, feeding bottles and teats (WHO, 2008). The International Code, generally referred to as the Code, was formulated in response to the realization that poor infant feeding practices were negatively affecting the growth, health and development of children and were a major cause of mortality in infants and young children. Poor infant feeding practices therefore were a serious obstacle to social and economic development (WHO, 1981). The World Health Assembly (WHA) adopted the Code in 1981 as a minimum requirement to protect and promote appropriate infant and young child feeding (IYCF) through the provision of safe and adequate nutrition for infants, by the protection and promotion of breastfeeding, and by ensuring the proper use of BMS, when these are necessary, on the basis of adequate information and through appropriate marketing and distribution practices (WHO, 1981). To achieve optimal growth, development and health, WHO recommends that infants should be exclusively breastfed for the first six months of life. Thereafter, to meet their nutritional requirements, infants should receive adequate and safe complementary foods while breastfeeding continues up to two years of age and beyond. Exclusive breastfeeding from birth is possible for most women who choose to do so. It is recommended for all children except for a few medical conditions, such as maternal medication with radioactive substances (WHO, 2008). Exclusive breastfeeding as often and as long as the baby wants results in ample milk production. If babies are not breastfed, for whatever reason, the Code advocates that they be fed safely on the best

available nutritional alternative. BMS should be available when needed, but not be promoted (WHO, 2008).

The Code was adopted through a WHA resolution and represents an expression of the collective will of governments to ensure the protection and promotion of optimal IYCF (WHO, 2008). WHA has since adopted several resolutions that are relevant to the Code and enjoy the same status, to strengthen the Code. So far, only 15.3% (30) of the 196 Member States have reported having enacted legislation on the Code (WHO, 2010); 17 indicated that only voluntary measures had been taken. Implementation and enforcement of the Code is thus lacking, mainly in countries where national measures are weak (IBFAN, 2009). In Africa, 33 (63.5%) out of 52 countries have taken some form of action, of which only 12 (36.4%), including Tanzania, have adopted most of the Code and subsequent WHA resolutions by means of a comprehensive law, decree or other legally enforceable measure. Tanzania adopted the Code in its entirety in 1994, through the NRs, which was incorporated into the Food (Control of Quality) Act number 10 of 1978 (MOHSW, 2008). The NRs prohibit promotion of any milk produced as partial or total replacement for mother's milk or represented as a complement to mother's milk to meet the growing nutritional needs of an infant, to the general public, health workers and in health care facilities. The NRs also prohibits promotions of feeding bottles, teats, valves for feeding bottles, pacifiers or nipple shield. Health workers are not permitted to receive any offer including gifts, free samples and sponsorship from baby food companies (MOHSW, 2008). The Tanzania Food and Drug Authority (TFDA) are responsible for implementation and monitoring of the NRs (TFDA, 2003). Any manufacturer, importer, packer or distributor or individuals breaching the law may face prosecution and upon conviction shall be liable to a fine not exceeding one million Tanzania Shillings or

imprisonment for a term not exceeding five years or to both such fine and imprisonment (MOHSW, 2008). This study took place in the health systems for the first time in Tanzania, but similar studies conducted in West Africa by Aguayo *et al.* (2003) and in Bangladesh, Poland, South Africa and Thailand as reported by Taylor (1998), in which the Code has been monitored both inside and outside the health care system, the results consistently showed gross violations of the Code and national legislations.

1.2 Problem Statement

Medical reasons for not breastfeeding are rare, and therefore, WHO and UNICEF (2009) have provided information on acceptable medical reasons for use of BMS. Breastfeeding has been the standard for optimal infant feeding till the late 19th century, but later, *peripartum* medical practices started to interfere with successful breastfeeding. Coupled with the improved storage of cow's milk, a profitable formula feeding business grew rapidly. Aggressive marketing of formula milk and rising infant mortality rates led to the adoption of Code. At first glance, a marketing code for the industry has little relevance to health professionals, yet many of the marketing practices take place in health care facilities and the community and involve health professionals. Data from the Tanzania Service Provision Assessment (WHO, 2008) show that three-fourths of pregnant women are not counselled on exclusive breastfeeding. Regrettably, today, in a globalized world economy, irresponsible marketing of BMS is still of concern, as recent findings suggest that bottle feeding is being encouraged by the attitude that feeding from a bottle was an indication of higher social status and through contacts with western health practices, exposure to mass media, and aggressive marketing of BMS. In addition to the risks posed by not having breast milk's protective qualities, BMS and feeding bottles in particular carry a high risk of contamination that can lead to life-threatening infections in young infants. Infant formula is not a sterile product and it may carry germs that can cause fatal illnesses (WHO, 2008). Artificial feeding is expensive, requires clean water, the ability of the mother or caregiver to read and comply with mixing instructions and a minimum

standard of overall household hygiene - factors not readily met in many households in Tanzania. It is therefore crucial to monitor the marketing practices of manufacturers and to ensure that their conduct conforms to the Code and relevant WHA resolutions. Artificial feeding in infants is associated with a higher risk of gastrointestinal and lower respiratory tract infections. Further evidence shows long term risks to obesity, type-II diabetes, higher blood pressure and higher total cholesterol level. In developing countries, the risks of poor health from bottle feeding are particularly marked. According to WHO (2004), every year, nearly 11 million children die worldwide before reaching their fifth birthday and most of them during their first year of life, due to preventable causes (WHO and UNICEF, 2003). It is estimated that high coverage of optimal breastfeeding practices could avert 13% of these deaths of children under five years occurring globally every year. Most of these deaths (98% in 2002) are in the world's poorest countries in sub-Saharan Africa, including Tanzania and South Asia. Diarrhoea, pneumonia, neonatal conditions, malaria and HIV/AIDS are the most prevalent causes of childhood mortality, contributing 96.8 of these deaths (WHO, 2004; MOHSW, 2008). In addition, malnutrition is associated with 54% of all child deaths, and measles remains a major cause of death (Fig.1).

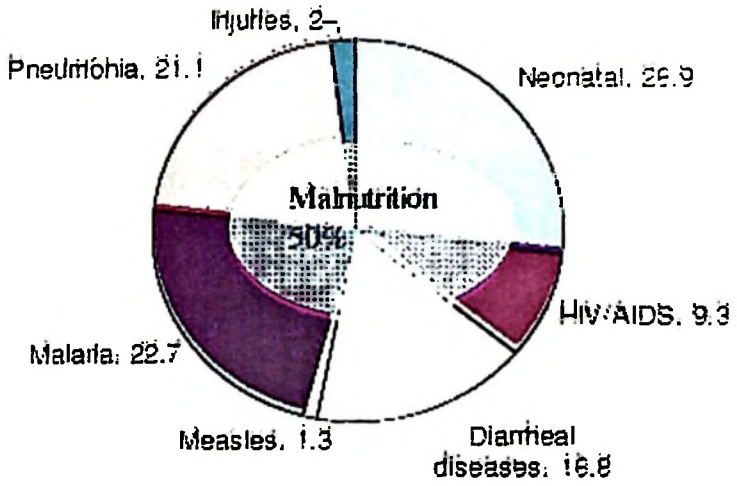

Figure 1: Causes of deaths among children aged less than five years, in 2006
Source: MOHSW (2008)

1.3 Justification

Sixteen years after Tanzania adopted the Code, is a sufficiently long enough period for an assessment at any degree or scale to determine the extent of giving practical effect to the Code and the challenges involved. Inappropriate feeding practices lead to infant malnutrition, morbidity and mortality in all countries; improper practices in the marketing of breast-milk substitutes and related products can contribute to these major public health problems. Implementation of the Code in Tanzania for the past 16 years has been a mixed success. Survey reports and anecdotal evidence of violations of the Code in general has been presented but no previous studies have used formal sampling techniques in studies to estimate the prevalence of violations at the health care facility (HCF) level (ICDC, 2004; IBFAN Africa, IBFAN and ICDC Penang, 2004; Baby Milk Action Update 36, 2005). The outcomes of the assessment are geared towards assisting the government and other concerned parties in renewing their commitment to promoting the health and nutrition of infants and young children through ensuring effective implementation of the Code and NRs. Optimal breastfeeding is estimated to reduce child mortality by 13%. Therefore, according to WHO (2008), reducing neonatal deaths through optimal infant feeding is a key step in reducing childhood mortality. When both exclusive breastfeeding and appropriate marketing of BMS are being pursued against the back-drop of the absolute risk of HIV transmission through breastfeeding between 30% and 40% for more than one year in Tanzania, WHO (2008) recommends exclusive breastfeeding regardless of the mother's HIV status, unless feeding with breast-milk substitutes is Acceptable, Feasible, Affordable, Safe and Sustainable (AFASS). The study seeks to shed light on these challenges in as far as awareness, knowledge and violation of the Code at HCF level are concerned. Health facilities have continued to be the preferred avenue for infant food manufacturers and distributors to reach mothers. The findings of the study on

implementation and giving effect to the principles of the Code at the HCF level will be useful in determining renewed commitments and course of action by implementers of the Code. It has to be borne in mind that in making efforts to reduce the risk of interfering with the promotion of breastfeeding for the great majority, the provision of BMS for these infants should be consistent with the principles and aims of the Code. Otherwise, for mothers who test negative for HIV, or who are not tested, exclusive breastfeeding remains the recommended feeding option (IBFAN, 2006).

1.4 Objectives

1.4.1 Overall objective

The overall aim of the study was to monitor compliance with the International Code of Marketing of Breast-milk Substitutes and the Tanzania Regulations for Marketing of Breast-milk Substitutes and Designated Products in selected health care facilities and retail distribution points in Ilala, Temeke, Kinondoni and Morogoro Municipalities.

1.4.2 Specific objectives

a) To assess health workers' awareness of, and compliance with the International Code of Marketing of Breast-milk Substitutes and the National Regulations in health care facilities.

b) To assess health care providers' counselling on infant feeding and manufacturers' marketing practices aimed at pregnant women and breastfeeding mothers with infants in selected health care facilities.

c) To assess compliance of infant foods and other complementary goods with labelling and other requirements stipulated in the International Code and National Regulations.

1.5 Conceptual Framework

This study looks at the exclusive breastfeeding and complementary feeding aspects of optimal infant feeding at the HCF level, basing on the International Code/National Regulations. The Code is an important part of creating an overall environment that enables mothers to make the best possible feeding choice, based on impartial information and free of commercial influences, and to be fully supported in doing so. A conceptual framework representing the Global Consensus on Optimal Infant Feeding is presented for comparisons in the analysis of the situation on the ground in health care facilities (Fig.2). Optimal feeding means exclusive breastfeeding from birth to about six months followed by the introduction of complementary foods drawn from the local diet, with breastfeeding sustained well into or beyond the second year with increasing amounts of complementary foods. To this end, the framework is depicted as a seamless entity and therefore, no arrows have been used to indicate directional linkage between one feeding pattern and duration and the other. With infants and young children, nutrition is directly related to food intake and infectious diseases such as diarrhoea, acute respiratory infection, malaria, and measles. Several studies have shown that exclusive breastfeeding for six months is nutritionally adequate and provides protection against many acute and chronic illnesses (AAP, 2005). WHA has urged Member States to foster appropriate complementary feeding practices from the age of about six months (IBFAN, 1998). Discussion on the results of analysis of data collected in the study is based on the framework, and in the end remarks or recommendations are given.

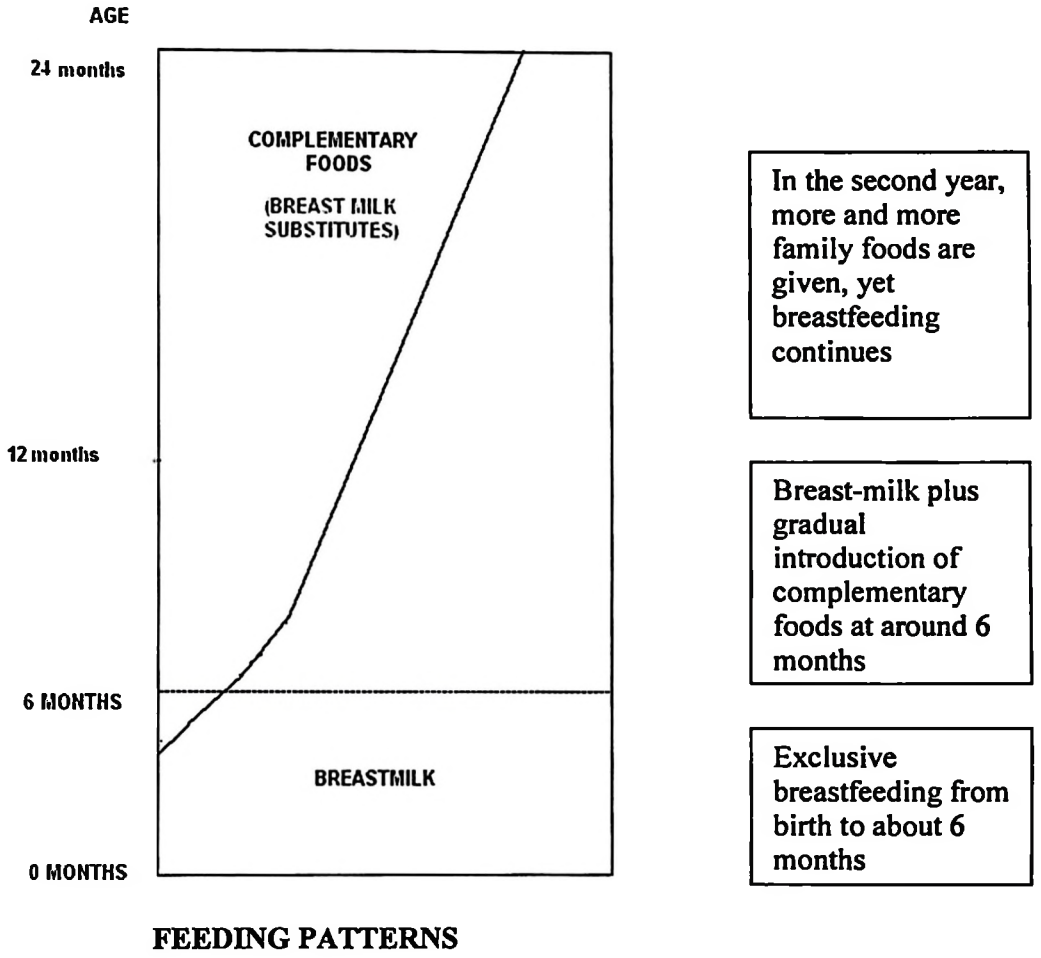

Figure 2: Conceptual framework for the study, representing global consensus on optimal infant feeding

Source: IBFAN Penang (1998)

1.6 Definitions Used in the Present Study

The following definitions were applied.

- **Complementary feeding** the process starting when breast milk alone or infant formula alone is no longer sufficient to meet the nutritional requirements of infants, and therefore other foods and liquids are needed, along with breast milk or a breast-milk substitute. The target range for complementary feeding is generally taken to be 6 to 23 months.

- **Complementary foods** any food, whether manufactured or locally prepared, suitable as a complement to breast milk or to a breast-milk substitute, when either becomes insufficient to satisfy the nutritional requirements of the infant.
- **Infant** means a person not more than 12 months of age
- **Malnutrition** a broad term commonly used as an alternative to undernutrition, but technically it also refers to overnutrition. People are malnourished if their diet does not provide adequate calories and protein for growth and maintenance or they are unable to fully utilize the food they eat due to illness (undernutrition). They are also malnourished if they consume too many calories (overnutrition).
- **Undernutrition** the outcome of insufficient food intake and repeated infectious diseases. It includes being underweight for one's age, too short for one's age (stunted), dangerously thin for one's height (wasted) and deficient in vitamins and minerals (micronutrient malnutrition).

Optimal infant feeding means exclusive breastfeeding from birth to about six months followed by the introduction of complementary foods drawn from the local diet. Breastfeeding should be sustained well into the second year with increasing amounts of complementary foods.

CHAPTER TWO

2.0 LITERATURE REVIEW

2.1 Information and Education on Infant Feeding

Protection, promotion, and support of breastfeeding in the spirit of the International Code (WHO, 1981) as well as the National Regulations (MOHSW, 2008) are critical public health needs. The Code places the responsibility upon governments to ensure that objective, consistent information is provided on infant and young child feeding (IYCF) for use by families, and those involved in the field of infant and young child nutrition, for optimal growth and development of children (Fig. 2). This responsibility should cover either the planning, provision, design and dissemination of information, or their control (WHO, 1981). The government of Tanzania is responsible for monitoring and taking action when violations of the Code are reported by concerned individuals or organizations. Tanzania adopted the International Code in 1994 (MOHSW, 2008). In 2004, the Tanzania Food and Nutrition Centre (TFNC) in collaboration with WHO and UNICEF initiated a process of adopting the Global Strategy on IYCF and came up with the Tanzania National Strategy on Infant and Young Child Nutrition (TNSIYCN) and the TNSIYCN Implementation Plan (TFNC, 2004) to complement and give effect to the Code. Many types of interventions on optimal or appropriate IYCF have been implemented in Tanzania and national practices, policies, programmes have been assessed using a WHO/Linkages Tool (Hussein, 2005), and a recommendation made for strong advocacy on the importance of optimal breastfeeding and complementary feeding practices.

Under the conceptual framework of this study, optimal or appropriate IYCF is explained in terms of two feeding patterns: exclusive breastfeeding and complementary feeding, in relation to the problems of malnutrition, morbidity and mortality. The 12 month period of

infancy is a time of rapid transition from a diet of virtually nothing but milk (either breast milk or infant formula) to a varied diet from nearly all food groups being consumed on a daily basis by most infants (Grummer-Strawn, 2008). In this regard, Raiten *et al.* (2007) observed that currently, evidence is incomplete about not only the composition of human milk, but also the maternal nutritional needs to support extended lactation and the appropriate nutrient composition of foods that will be used to complement breastfeeding at least through the first year of life (Raiten *et al.*, 2007).

2.2 Breastfeeding and the use of Human Milk

Breast milk alone is the ideal nourishment for infants for the first six months of life (UNICEF, WHO, UNESCO, UNFPA, UNDP, UNAIDS, WFP and World Bank (2010), combining the three fundamentals of sound nutrition – food, health and care. Human milk is species-specific for humans, and all substitute feeding preparations differ markedly from it, making human milk uniquely superior for infant feeding (AAP, 2005). Exclusive breastfeeding is the reference or normative model against which all alternative feeding methods must be measured with regard to growth, health, development and all other short- and long-term outcomes. In addition, human milk-fed premature infants receive significant benefits with respect to host protection and improved developmental outcomes compared with formula-fed premature infants (AAP, 2005). Breast milk alone contains all the nutrients, antibodies, hormones and antioxidants an infant needs to thrive (RDC, 2006; UNICEF, MOHA and IBFAN, 2002). It protects babies from diarrhoea and acute respiratory infections, acute otitis and atopic dermatitis, stimulates the immune systems and response to vaccination and, according to some studies, it confers cognitive benefits as well. From 6-12 months it fulfills 50% of nutritional needs, and from 12-24 months it continues to fulfill one third of the needs. Breast milk quantity increases as the feeding frequency increases; it decreases if formula or other products, including water is

introduced. Continued breastfeeding to two years, accompanied by appropriate complementary feeding, maintains good nutritional status and continues to prevent diarrhoea. The mother herself benefits as well. Breastfeeding is proven to reduce the risk from ovarian and pre-menopausal breast cancer; it plays an important role in birth spacing; helps reduction of postmenopausal hip fractures and creates a special emotional bonding between the mother and her baby. It is safe, clean and available in just the amount the baby needs. Breastfeeding is also associated with significant economical and environmental benefits (UNICEF, MOHA and IBFAN, 2002).

After delivery, the infant must make many physiologic adjustments, develop immunologic defences, and take in adequate nutrients for survival. The type and consistency of foods change as the gastro-intestinal system matures and becomes able to metabolize the components and excrete the needed metabolites of increasingly complex foods (Bronner and Paige, 1992). Infants need complementary foods in addition to breast-milk from the age of six months.

2.3 Maternity Care Practices

Evidence shows that hospital-based practices affect breastfeeding duration and exclusivity throughout the first year of life (Bartic *et al.*, 2009), although according to Manji (2009) maternal and newborn health services are provided most effectively through a continuum of care, which links health service packages across the lifecycle and the level of care provided. General entry of pregnant women into the formal health system through antenatal care is high in Tanzania (Manji, 2009). However, the quality of care during this time is below the expected level and many women do not return to a health facility to give birth. Manji (2009) reports that in Tanzania, home deliveries were propelled by the cost

and lack of availability of transport, informal payments, poor quality of care in health facilities, a lack of privacy, and a preference for familiar birth attendants.

Birthing practices such as delayed timing of first breastfeeding and the use of labor analgesics, epidural anesthesia, and surgical (caesarian) birth have all been demonstrated to negatively impact breastfeeding. Maternity care practices related to breastfeeding take place during the *intrapartum* hospital stay, such as practices related to immediate prenatal care, care during labour and birthing, and *postpartum* care (Shealy *et al.*, 2005). Forty-seven percent of babies in Tanzania are delivered at a health facility (Manji, 2009). Almost half (46%) of births in Tanzania are assisted by health professionals, including doctors, clinical officers, nurses, and midwives (Manji, 2009). Traditional Birth Attendants (TBAs) assist in 19% of deliveries (Manji, 2009). The maternity care experience exerts unique influence on both breastfeeding initiation and later infant feeding behaviours (Shealy *et al.*, 2005). In most cases, however, these experiences reflect routine practices at the facility level, and new mothers rarely request care different from that offered them by health professionals (Shealy *et al.*, 2005). Prenatal education on breastfeeding can affect a mother's decision to even consider it as a feeding option (Shealy *et al.*, 2005). Medications and procedures administered to the mother during labour affect the infant's behavior at the time of birth, which in turn affects the infant's ability to suckle in an organized and effective manner at the breast. Infants who are put to the breast within the first few hours after birth continue breastfeeding longer than those whose first breastfeeding is delayed. (Shealy *et al.*, 2005) Mothers who room-in with their infants will have more opportunities to practice breastfeeding because of the infant's proximity (Shealy *et al.*, 2005).

2.4 Breastfeeding after Caesarean Delivery

Breastfeeding is more difficult after a caesarean for many reasons. These include maternal pain and fatigue, delayed access to baby, increased supplementary feedings, separation of mother and baby, blood loss causing anaemia, mechanical problems in feeding, interference from medications, Fortunately, although these can place significant barriers in front of the caesarean woman, many women manage to go on and breastfeed their child anyhow, in spite of the difficulties. The type of anaesthesia used for the caesarean can also influence breastfeeding rates. Baumgarder *et al.* (2003) reports that according to several studies (Lie and Juul, 1988; Mathur *et al.*, 1993 and Albania *et al.*, 1999) it has been found that breastfeeding rates are significantly higher after regional anaesthesia (epidural or spinal) than after general anaesthesia. Lie and Juul (1988) studied the impact of anaesthesia on breast feeding in 56 women who underwent a caesarean delivery, 28 of whom received epidural analgesia and 28, general anaesthesia. By the seventh postoperative day, 96% of those who received epidural analgesia and 89% of those who received general anaesthesia were successfully breast feeding. However, at 6 months, more women who received epidural analgesia (71%) were successfully breast feeding as compared with those who received general anaesthesia (39%). Better long-term breast feeding in the epidural group was largely attributed to less "weariness" in the mother and earlier mother-child contact. Mathur *et al.* (1993) confirmed that an early start of breast feeding is more successful. They found that all mothers who were breast feeding within 12 hours of caesarean delivery were exclusively breast feeding their infants during that hospitalization, whereas only 5.8% of mothers who initiated breast feeding after 96 h were exclusively breast feeding during that hospitalization. The study by Mathur *et al.* (1993) suggested that for proper establishment of breastfeeding in mothers undergoing caesarean section an elective procedure under spinal anaesthesia promoted early initiation of

breastfeeding. Early initiation of breastfeeding had highly significant correlation with establishment of breastfeeding while separation of babies from mothers discouraged breastfeeding (Mathur *et al.*, 1993).

2.5 Complementary feeding practices

Complementary feeding is defined as the process starting when breast milk alone is no longer sufficient to meet the nutritional requirements of infants, and therefore other foods and liquids are needed, along with breast milk. The target age range for complementary feeding is generally taken to be 6 to 24 months of age, even though breastfeeding may continue beyond two years (PAHO, 2003). Adequate nutrition during infancy and early childhood is critical to the development of children's full human potential (PAHO, 2003; Siraj-Blatchford and Woodhead, 2009). Poor IYCF practices, coupled with high rates of infectious diseases, are the principal proximate causes of malnutrition during the first two years of life (PAHO, 2003). The second half of an infant's first year is an especially vulnerable time, when breast milk alone is no longer sufficient to meet his or her nutritional requirements and complementary feeding should start. The introduction of solid foods should parallel the developmental changes that occur within the central nervous system throughout the first year. These provide a level of readiness for the infant to manage foods of various textures from full liquid to soft (Bronner and Paige, 1992). Many children suffer from under nutrition and growth faltering during this period, with consequences that persist throughout their life (PAHO, 2003).

In Tanzania, common problems include the provision of poor quality complementary foods, insufficient amounts of complementary foods, insufficient breastfeeding, detrimental feeding practices, and contamination of complementary food and feeding

utensils. In addition, if complementary foods are given too early or too frequently, they displace breast milk, which is of higher nutritional value than other foods (IDRC, 1988). Even though significant technologic advances have led to changes in the way infants can be fed, human milk is still the optimal choice under complementation (Bronner and Paige, 1992).

2.6 Implementation of the Code in Health Care Systems

The Code applies to the marketing and related practices of the following products: BMS, including infant formula; other milk products, foods and beverages, including bottle-fed complementary foods; feeding bottles, and teats. This would include baby teas, juices and waters. Formulas for infants with special medical or nutritional needs also fall within the scope of the Code. It also applies to their quality and availability, and to information concerning their use. Research has provided evidence that clearly shows that breast milk substitute marketing practices influence health workers' and mothers' behaviours related to infant feeding (NZBA, 2010). Marketing practices prohibited by the Code have been shown to be harmful to infants, increasing the likelihood that they will be given formula and other items under the scope of the Code and decreasing the optimal feeding practices (NZBA, 2010). The IC states that: the health authorities in Member States should take appropriate measures to encourage and protect breast-feeding and promote the principles of this Code, and should give appropriate information and advice to health workers in regard to their responsibilities, including the information specified in Article 4.2 of the Code (WHO, 1981).

2.6.1 Health authorities should promote breastfeeding, but not bottle-feeding

Health authorities should make sure health workers know about the Code, know what it says, and help them put it into practice. The role of health workers in giving effect to the

principles and aims of the Code for protection and promotion of breastfeeding is elaborated further in the Innocenti Declaration, which was adopted at a meeting in Florence, Italy, ten years after adoption of the Code in August, 1990 by high level government decision makers from 30 countries (UNICEF, 2006). The Declaration aimed at reinforcing a breastfeeding culture by applying a vigorous defence against incursions of a bottle-feeding culture, spelled out as 'Ten Steps to Successful Breastfeeding' (Appendix 1). These steps should be implemented by every facility providing maternity services and care for newborn infants in order to be declared a BABY FRIENDLY HOSPITAL. According to 'Innocenti', every nurse, doctor and midwife employed in maternity services should know and practice all of the *Ten Steps* (Appendix 1). A plan to help hospitals change their practices and convince their staff to seriously promote breastfeeding is called the Baby Friendly Hospital Initiative or BFHI (IBFAN Penang, 2002). Shealy *et al.* (2005) found that mothers experiencing none of the Ten Steps to Successful Breastfeeding (Appendix 1) required for BFHI designation during their stay were eight times as likely to stop breastfeeding before six weeks as those experiencing five steps. This finding emphasizes the value of implementing incremental change within the hospital setting. In addition to reforming maternity care practices throughout the facility, hospitals and other care centres can implement changes one at a time that incrementally improve maternity care and breastfeeding outcomes. Incremental steps need not be limited to those in the Ten Steps (Appendix 1), yet should be evidence based (Shealy *et al.*, 2005).

In a study involving 100 mothers who underwent caesarean section and their infants, regarding various factors affecting the establishment of breastfeeding during their stay in hospital in India, Mathur *et al.* (1993) found that total breastfeeding was more frequent (86.8%) in newborn infants who received prelacteal feeds by spoon as compared to those who received by feeding bottle (33.3%). Babies separated from the mothers in hospital

were less likely (35.5%) to be on total breastfeeding as compared to those (68.1%) who were not separated from their mothers.

2.6.2 No promotion of infant feeding products in health care facilities

Article 6.2 of the Code states that no facility of a health care system should be used for the purpose of promoting infant formula or other products within the scope of the Code. This means that booklets, leaflets, brochures, posters, feeding bottles, cot tags, stickers, clinic cards, prescription pads, and similar materials which advertise infant feeding products should not be permitted. No display of artificial infant feeding products in health care facilities. The Code does not, however, preclude the dissemination of information to health professionals as provided in Article 7.2 of the Code (WHO, 1981). Further, facilities of health care systems should not be used for the display of products within the scope of this Code, for placards or posters concerning such products, or for the distribution of material provided by a manufacturer or distributor other than that specified in Article 4.3 of the Code (WHO, 1981). The only materials allowed to be provided by companies should comply with Article 4.2 of the Code and should only be donated at the request of and with the written approval of the appropriate government authority (WHO, 1981; MOH, 1994; IBFAN Penang, 2002). Furthermore, in accordance with Article 6.4 of the Code (WHO, 1981), the use by the health care system of "professional service representatives", "mothercraft nurses" or similar personnel, provided or paid for by manufacturers or distributors, should not be permitted. It means that company marketing personnel, no matter what they are called (as they sometimes happen to be referred to as Corporate Affairs personnel), should not be permitted to have contacts with mothers (IBFAN Penang, 2002).

2.6.3 Artificial infant feeding is the exception, but not the rule

In accordance with Article 6.5 of the Code (WHO, 1981), feeding with infant formula, whether manufactured or home-prepared, should be demonstrated only by health workers or other community workers if necessary; and only to the mothers or family members who need to use it; and the information given should include a clear explanation of the hazards of improper use. It should be noted that this advice is still valid even now that more is known about HIV transmission through breastfeeding (IBFAN Penang, 2002). According to Article 6.6 of the Code, donations or low-price sales to institutions or organizations of supplies of infant formula or other products within the scope of this Code, whether for use in the institutions or for distribution outside them, may be made. Such supplies should only be used or distributed for infants who have to be fed on BMS (WHO, 1981).

2.6.4 No donations or free supplies of infant feeding products

The World Health Assembly reiterated clearly in 1994 (UNICEF, 2004) that there should be no donations of free or subsidized supplies of breast-milk substitutes in any part of the health care system. If these supplies are distributed for use outside the institutions, this should be done only by the institutions or organizations concerned. Such donations or low-price sales should not be used by manufacturers or distributors as a sales inducement (WHO, 1981). Mizuno *et al.* (2006) reported that it was known anecdotally that most hospitals in Japan received free supplies of infant formula or at significant discount in exchange for distributing hospital-discharge packs prepared by infant formula companies to new mothers. Mizuno *et al.* (2006) argued that the close relationship between manufacturers of infant formula and hospitals ensured that new mothers had ready access to infant formula leading to unnecessary supplementation with formula, and eroding support for breastfeeding. In accordance with Article 6.7 of the Code, where donated

supplies of infant formula or other products within the scope of this Code are distributed outside an institution, the institution or organization should take steps to ensure that supplies can be continued as long as the infants concerned need them. Donors, as well as institutions or organizations concerned, should bear in mind this responsibility (WHO, 1981).

2.6.5 No brand names on donated equipment

According to Article 6.8 of the Code, equipment and materials in addition to those referred to in Article 4.3, donated to a health care system may bear a company's name or logo, but should not refer to any proprietary product within the scope of this Code (WHO, 1981). In effect it means, product names are not allowed. However, when the materials are designated for promotion, such as happy babies on posters, stickers, charts or calendars, Article 6.2 applies. It does not allow any HCF to be used for promotional ends (IBFAN Penang, 2002).

In a survey conducted by Nelson *et al.* (2004) on companies marketing BMS in Hong Kong to determine self-reported adherence to the Code, companies were informed that individual responses would not be published and seven of nine companies responded to the questionnaire. The survey results showed that the majority of respondents promoted infant and follow-on formula in hospitals and provided free supplies of infant formula to hospitals. Follow-on formula and complementary foods were promoted in food stores and to the general public and free samples were given to mothers reflecting a belief that, despite WHA resolutions, follow-on formula is not a BMS. This demonstrated that for a common understanding and practice, trans-national companies should follow the Code and subsequent WHA resolutions equally in all countries (Nelson *et al.*, 2004).

2.7 Promotion of BMS and Related Products to Health Workers and in Health Care Settings

2.7.1 Understaffing can have a negative impact on health workers' responsibility to protect and promote breastfeeding

The International Code states that health workers should encourage and protect breast-feeding; and those who are concerned in particular with maternal and infant nutrition should make themselves familiar with their responsibilities under this Code, including the information specified in Article 4.2 (WHO, 1981). Like the majority of sub-Saharan African countries, Tanzania suffers from a human resource crisis in the health sector. According to Manji (2009), there is a critical shortage of skilled health providers in Tanzania, despite the existence of five medical schools, with pediatrics as a recognized post-graduate specialty. Seventy four percent of all health workers are employed by the government. There are no more than five qualified Neonatologists in Tanzania (Manji, 2009). Overall, Pediatricians and Neonatologists are found only in higher level health facilities. Newborn care is part of the curriculum and responsibility of midwives and physicians, who receive initial training in the theory and practice of care. Closer to the community, Maternal and Child Health (MCH) aides and community-based workers share responsibilities for the general assessment of well-being of neonates in other settings. Even when healthcare workers are available, however, they are not always present. One recent health facility survey in southern Tanzania reported problems with staff absence; only two thirds of all employed staff were present on the day of the survey. Forty eight nurses constitute the largest cadre of health professionals in Tanzania. The vast majority of nurses receive basic midwifery training. Prior to the late 1990s, an optional (but almost always accepted) year of midwifery studies followed the completion of nursing studies (Manji, 2009). Understaffing can have a negative impact on health workers' responsibility

to protect and promote breastfeeding. In a survey of 8,000 Registered Nurses in a Pennsylvania hospitals in the United States of America, Sochalski (2004) found that workload and understaffing contributed to medical errors and patient falls and to a number of important nursing tasks left undone at the end of every shift (Sochalski, 2004).

2.8 Infant Formula Composition Contrasts with Breast Milk

2.8.1 Early infant foods

Throughout history, mothers who could not (or chose not to) breastfeed their babies either employed the use of a wet nurse or, less frequently, prepared food for their babies, a process known as "dry nursing" (Wikipedia contributors, 2010). Baby food composition varied according to region and economic status. In Europe and America during the early 19th century, the prevalence of wet nursing began to decrease, while the practice of feeding babies mixtures based on animal milk rose in popularity. This trend was driven by cultural changes as well as increased sanitation measures, and it continued throughout the 19th and much of the 20th century, with a notable increase after Elijah Pratt invented and patented the India-rubber nipple in 1845 (Wikipedia contributors, 2010). As early as 1846, scientists and nutritionists noted an increase in medical problems and infant mortality was associated with dry nursing. In an attempt to improve the quality of manufactured baby foods, in 1867, Justus von Liebig developed the world's first commercial infant formula, Liebig's Soluble Food for Babies. The success of this product quickly gave rise to competitors such as Mellin's Infant Food, Ridge's Food for Infants and Nestlé's Milk (Jelliffe, 1976; Greenberg, 1980).

2.8.1 Raw milk formulas

As physicians became increasingly concerned about the quality of such foods, medical recommendations such as Thomas Morgan Rotch's "percentage method" (published in

1890) began to be distributed, and gained widespread popularity by 1907 (Wikipedia contributors, 2010). These complex formulas recommended that parents mix cow's milk, water, cream, and sugar or honey in specific ratios to achieve the nutritional balance believed to approximate human milk reformulated in such a way as to accommodate the believed digestive capability of the infant. At the dawn of the 20th century in the United States, most infants were breastfed, although many received some formula feeding as well. Home-made "percentage method" formulas were more commonly used than commercial formulas in both Europe and the United States (Fomon, 2001). They were less expensive and were widely believed to be healthier. However, formula-fed babies exhibited more diet-associated medical problems, such as scurvy, rickets and bacterial infections than breastfed babies (Fomon, 2001). By 1920, the incidence of scurvy and rickets in formula-fed babies had greatly decreased through the addition of orange juice and cod liver oil to home-made formulas. Bacterial infections associated with formula remained a problem more prevalent in the United States than in Europe, where milk was usually boiled prior to use in formulas (Fomon, 2001).

2.8.2 Evaporated milk formulas

In the 1920s and 1930s, evaporated milk began to be widely commercially available at low prices, and several clinical studies suggested that babies fed evaporated milk formula thrive as well as breastfed babies (these findings are not supported by modern research) (Wikipedia contributors, 2010). These studies, accompanied by the affordable price of evaporated milk and the availability of the home icebox initiated a tremendous rise in the use of evaporated milk formulas. By the late 1930s, the use of evaporated milk formulas in the United States surpassed all commercial formulas, and by 1950 over half of all babies in the United States were reared on such formulas (Fomon, 2001).

2.8.3 Commercial formulas

In parallel with the enormous shift (in industrialized nations) away from breastfeeding to home-made formulas, nutritionists continued to analyze human milk and attempt to make infant formulas that more closely matched its composition (Fomon, 2001). Maltose and dextrins were believed to be nutritionally important, and in 1912, the Mead Johnson Company released a milk additive called Dextri-Maltose. This formula was made available to mothers only by physicians. In 1919, milk fats were replaced with a blend of animal and vegetable fats as part of the continued drive to closer simulate human milk. This formula was called SMA for "simulated milk adapted" (Jelliffe, 1976; Greenberg, 1980).

In the late 1920s, Alfred Bosworth released Similac (for "similar to lactation"), and Mead Johnson released Sobee. Several other formulas were released over the next few decades, but commercial formulas did not begin to seriously compete with evaporated milk formulas until the 1950s (Fomon, 2001). The reformulation and concentration of Similac in 1951, and the introduction (by Mead Johnson) of Enfamil in 1959 were accompanied by marketing campaigns that provided inexpensive formula to hospitals and Pediatricians. By the early 1960s, commercial formulas were more commonly used than evaporated milk formulas, which all but vanished in the 1970s. By the early 1970s, over 75% of babies in the United States were fed on formulas, almost entirely commercially produced (Fomon, 2001).

When birth rates in industrial nations tapered off during the 1960s, infant formula companies heightened marketing campaigns in non-industrialized countries (Fomon, 2001). Unfortunately, poor sanitation led to steeply increased mortality rates among infants fed formula prepared with contaminated (drinking) water. Organized protests, the

most famous of which was the Nestlé boycott of 1977, called for an end to unethical marketing. This boycott is ongoing, as the current coordinators maintain that Nestlé engages in marketing practices which violate the International Code. These have become the more usual way to feed infants in developed communities and have come to be considered as the equivalent to human milk, or, more in accordance to modern life, resulting into a rapid decline of breastfeeding throughout most of the twentieth century (Wikipedia contributors, 2010). However, Lönnerdal (2003) observes that it has become increasingly accepted that, when infant formula is manufactured, the nutrient composition of breast milk cannot serve as a norm, because nutrients are utilized differently from the formula. Rather, growth and clinical indices of breastfed infants should be the guideline for formula-fed infants, since it is well known that nutrients are utilized exceptionally well from breast milk. Several factors likely to contribute to this high degree of utilization and some of these factors may be proteins present in human milk (Lönnerdal, 2003). At the same time, the age of introduction of semi-solids as complementary foods has moved progressively downwards in urban societies and communities, partly as a result of concern by the infant food industry to increase their sales profits by widening the age-range of their consumers. Due to ignorance, in many poor societies and communities, semisolids (both industrially made and home-prepared) are currently fed from the first weeks of life, thus becoming virtual substitutes of breast milk (Jelliffe, 1976; IBFAN, 1998). Further, professional and commercial influences at HCF level combine to discourage breastfeeding, as do non-implementation and continued gaps in maternity legislation (UNICEF, 2010).

2.8.4 Inappropriate feeding practices and malnutrition

It is critical to understand that inappropriate feeding practices are intimately related to malnutrition, which fuels child deaths. Artificial feeding, whether by use of industrially

formulated infant foods or homemade feed preparations versus breastfeeding in infants, is associated with a higher risk of gastrointestinal and lower respiratory tract infections. A formula requires mothers to read and understand instructions for preparing the formula, yet, in many of the developing countries where infant formula is marketed, mothers cannot read. Even where the mother can read her native language, in many instances she is faced with a foreign script. In Dar es Salaam, for example, where Nestlé's Lactogen is widely marketed, a local doctor reported that the instructions were in English even though most of the women were fluent only in Kiswahili (Multinational Monitor, 1987). Even where a mother can read and understand printed instructions, she is ill-equipped to follow them adequately and safely. Formula preparation requires clean water to mix with the formula. Yet boiled water is a luxury to many women in developing countries due to high fuel/energy costs (Multinational Monitor, 1987).

Complementary foods are often inadequate in energy and micronutrient concentration or quality, and are often prepared, stored, or fed to children in ways that increase their risk of illness (Hill *et al.*, 2004). In a report of a WHO and FAO (2004) expert meeting, the report drew the attention of the two United Nations bodies to the fact that although liquid, ready-to-feed infant formula is commercially sterile, powdered infant formula is not. Enterobacteriaceae were present in 52% of 141 different formulas from 35 countries in a 1988 study by Muytjens, Roelofs-Willemse, and Jasper (WHO and FAO, 2004). Enterobacteriaceae are also common pathogens for systemic infection in neonates and, to a lesser extent, older infants (WHO and FAO, 2004). In situations where infants are not breastfed, caregivers, particularly of infants at high risk, should be regularly alerted that powdered infant formula is not a sterile product and can be contaminated with pathogens that can cause serious illness. The care givers should be provided with information that can reduce the risk (WHO and FAO, 2004).

It has been estimated by WHO that improved or optimal breastfeeding practices could save some 1.5 million children a year (Sguassero, 2008). Optimal breastfeeding practices include exclusive breastfeeding (breast-milk with no other foods or liquids) for the first six months of life, followed by breast-milk and complementary foods (solid or semi-solid foods) from about six months of age on, and continued breastfeeding for up to at least two years of age and beyond, while receiving appropriate complementary foods. This is the global public health recommendation on IYCF (UNICEF, 2010). The Tanzania Demographic and Health Survey (TDHS) for 2004-2005 revealed that almost all children in Tanzania were breastfed (96%). Placing the child to the breast during the first day was also very common (92%). However, only 59% of children were breastfed within the first hour after birth (NBS Tanzania and ORC Macro, 2005). These figures show little change since the 1996 Tanzania Demographic and Health Survey (NBS Tanzania and ORC Macro, 2005).

The median duration of breastfeeding in the 2004-05 TDHS was 21 months (NBS Tanzania and ORC Macro., 2005). Although WHO and UNICEF (2003) recommend exclusive breastfeeding for six months, complementary feeding in Tanzania starts early. One-fourth of children aged 2-3 months receive liquids other than breast milk and one-third receive complementary foods. Among all children less than 6 months, 41% were exclusively breastfed (MOHSW, 2008). This is an increase from 32% in the 1999 Tanzania Reproductive and Child Health Survey (TRCHS). Exclusive breastfeeding from the 1996 DHS 24 hour-based recall data was about 40% of infants at 0-1 month, 25% at 2-3 months and <10% at 4-5 months (Aarts *et al.*, 2000). Nine out of 10 children aged 6-9 months are fed complementary foods. Foods made from grains constitute the majority of their diet. Globally, the highest levels of timely complementary feeding and continued

breastfeeding are in the least developed countries. It should be noted that, despite this substantial overall improvement, less than half of all infants are now being exclusively breastfed for up to four months (38%), and only about half are receiving complementary foods in a timely manner. The figures for timely complementary feeding (at 6 to 9 months) in the developing world, are contrasting with those of Tanzania, which slightly decreased from 93% to 90%, while levels for the former increased from 41% to 50% between 1989 and 1999. Perhaps, what could be more revealing in this comparison would be the composition of the diet of the complementary foods consumed as reported for the Tanzania situation. (Bureau of Statistics [Tanzania] and Macro International Inc., 1997; NBS [Tanzania] and ORC Macro., 2005).

2.8.5 Infant feeding in the context of mother-to child transmission (MTCT) of HIV and the Code

The prevention of Mother-to-Child Transmission of HIV (PMTCT) is a strategy aimed at reducing HIV-infection among children born to HIV-positive mothers during pregnancy, birth or through breastfeeding (USAID, 2007). The prevalence of HIV among pregnant women in Tanzania is 8.7 percent, compared to the national figures of 7 percent among persons aged 15-49 years. Among children less than 15 years of age who are HIV-infected, 90 percent of the infections are attributed to mother-to-child transmission (USAID, 2007). Moreover, HIV and AIDS contribute to 16 percent of all deaths among children under-five. It is therefore of utmost importance that opportunities be identified and interventions be strengthened to reduce the transmission of HIV from mother to child in all three modalities (USAID, 2007). Inadequate knowledge about the availability of prevention services in antenatal settings often impedes their uptake. In the United Republic of Tanzania, only 53% of women and 44% of men reported awareness that

medications and other services are available to reduce the risk of mother-to-child HIV transmission (TACAIDS *et al.*, 2008).

The DHS reports for 1996 and 2004-5 show that in the intervening period of 10 years since Tanzania adopted the International Code, there have been some achievements in improved exclusive breastfeeding rates. Perhaps the rates could have been better, were it not for the HIV/AIDS pandemic, in which breastfeeding without interventions has been associated with a mother-to-child-transmission at the rate of 5-20% (Bulteel.and Henderson, 2007). In a study by Latham and Preble (2000) on appropriate feeding methods for infants of HIV infected mothers in sub-Saharan Africa, it is reported that the role of breastfeeding in the vertical transmission of HIV has been exaggerated because exclusive breast feeding reduces HIV transmission. The report, however, raises concern over increasing mother to child transmission of HIV in sub-Saharan Africa, in which case, promoting infant formula feeding for replacement might increase infant morbidity, malnutrition and mortality (Latham and Preble, 2000). There has been vigorous controversy around whether HIV-infected women in developing countries should choose formula or breastfeeding for their infants, with arguments that formula eliminates HIV transmission but incurs risk of increased mortality, although on the other hand breastfeeding has multiple benefits but entails risk of HIV transmission. Child health specialists have urged governments and agencies not to provide free formula milk in programmes aimed at preventing mother to child HIV transmission, as this targets beneficiary erroneously, creates a false perception of endorsement by health workers and finally increases the spill-over effect into the normal population (Coutsoudis *et al.*, 2002).

Further, there is another view that in most poor countries afflicted by AIDS, the risk of bottle feeding is higher than the risk of mother to infant transmission of HIV infection. It

is argued that this fact needs to be continually reiterated to decision makers, otherwise manufacturers of BMS will capitalise on HIV infection as a reason for promoting free samples of their formula (Walterson and Tumwine, 2003), in violation of the International Code. Therefore, enhancement of wide application of optimal infant feeding practices is the reason that adoption and implementation of the International Code in health care systems by Tanzania and other WHO member states represents the development of an international consensus on optimal infant feeding (IBFAN, 1998), along the continuum of care from pregnancy, neonatal period, infancy and childhood (WHO, 2008). This could contribute significantly towards Tanzania achieving the Millennium Development Goals (MDGs) on reduction of child mortality and improvement of maternal health. Accordingly, as per article 7.1 of the Code (WHO, 1981), health workers should encourage and protect breast-feeding; and those who are concerned in particular with maternal and infant nutrition should make themselves familiar with their responsibilities under this Code, including the information specified in Article 4.2. Those that work most closely with mothers and infants should study and discuss the Code; especially the information intended for mothers as listed in Article 4.2.

Article 7.2 of the Code states that information provided by manufacturers and distributors to health professionals regarding products within the scope of this Code should be restricted to scientific and factual matters, and such information should not imply or create a belief that bottle feeding is equivalent or superior to breast-feeding. It should also include the information specified in Article 4.2 (WHO, 1981). Further, according to Article 7.3 of the Code, financial or material inducements to promote products within the scope of this Code should not be offered by manufacturers or distributors to health workers or members of their families, nor should these be accepted by health workers or

members of their families (WHO, 1981). Similarly, according to Article 7.4 of the Code, samples of infant formula or other products within the scope of this Code, or of equipment or utensils for their preparation or use, should not be provided to health workers except when necessary for the purpose of professional evaluation or research at the institutional level. Health workers should not give samples of infant formula to pregnant women, mothers of infants and young children, or members of their families (WHO, 1981).

Article 7.5 of the Code states that manufacturers and distributors of products within the scope of this Code should disclose to the institution to which a recipient health worker is affiliated any contribution made to him or on his behalf for fellowships, study tours, research grants, attendance at professional conferences, or the like. Similar disclosures should be made by the recipient (WHO, 1981).

2.9 Non-conformity of Labelling Information to the International Code

Labels should be designed to provide the necessary information about the appropriate use of the product, and so as not to discourage breast-feeding. Manufacturers and distributors of infant formula should ensure that each container is a clear, conspicuous, and easily readable and understandable message printed on it, or on a label which cannot readily become separated from it, in an appropriate language, which includes all the following points: (a) the words "Important Notice" or their equivalent; (b) a statement of the superiority of breastfeeding; (c) a statement that the product should be used only on the advice of a health worker as to the need for its use and the proper method of use; (d) instructions for appropriate preparation, and a warning against the health hazards of inappropriate preparation. Neither the container nor the label should have pictures of infants, nor should they have other pictures or text which may idealize the use of infant formula. They may, however, have graphics for easy identification of the product as a

BMS and for illustrating methods of preparation. The terms "humanized", "maternalized" or similar terms should not be used. Inserts giving additional information about the product and its proper use, subject to the above conditions, may be included in the package or retail unit. When labels give instructions for modifying a product into infant formula, the above should apply.

Food products within the scope of this Code, marketed for infant feeding, which do not meet all the requirements of an infant formula, but which can be modified to do so, should carry on the label a warning that the unmodified product should not be the sole source of nourishment of an infant. Since sweetened condensed milk is not suitable for infant feeding, or for use as a main ingredient of infant formula, its label should not contain purported instructions on how to modify it for that purpose. Further, the label of food products within the scope of this Code should also state all the following points: (a) the ingredients used; (b) the composition/analysis of the product; (c) the storage conditions required; and (d) the batch number and the date before which the product is to be consumed, taking into account the climatic and storage conditions of the country concerned. The quality of products is an essential element for the protection of the health of infants and therefore should be of a high recognized standard. Food products within the scope of this Code should, when sold or otherwise distributed, meet applicable standards recommended by the *Codex Alimentarius Commission* and also the Codex Code of Hygienic Practice for Foods for Infants and Children.

2.10 Implementation and Monitoring of the Code

Article 11 of the Code states that Governments should take action to give effect to the principles and aims of this Code, as appropriate to their social and legislative framework, including the adoption of national legislation, regulations or other suitable measures (WHO, 1981). National policies and measures, including laws and regulations, which are

adopted to give effect to the principles and aims of the Code should be publicly stated, and should apply on the same basis to all those involved in the manufacture and marketing of products within the scope of the Code.

Monitoring the application of the Code lies with governments acting individually and collectively through the World Health Organization as provided in paragraphs 6 and 7 of Article 11. The manufacturers and distributors of products within the scope of the Code, and appropriate non-governmental organizations, professional groups, and consumer organizations should collaborate with governments to this end. Independently of any other measures taken for implementation of this Code, manufacturers and distributors of products within the scope of this Code should regard themselves as responsible for monitoring their marketing practices according to the principles and aim of this Code, and for taking steps to ensure that their conduct at every level conforms to them (IASO, CI and IOTF, 2008). Non-governmental organizations, professional groups, institutions and individuals concerned should have the responsibility of drawing the attention of manufacturers or distributors to activities which are incompatible with the principles and aim of this Code, so that appropriate action can be taken. The appropriate governmental authority should also be informed. Manufacturers and primary distributors of products within the scope of this Code should apprise each member of their marketing personnel of the Code and of their responsibilities under it. In accordance with Article 62 of the Constitution of the World Health Organization, Member States shall communicate annually to the Director-General information on action taken to give effect to the principles and aim of this Code (IASO, CI and IOTF, 2008).

The Director-General of WHO is required to report in even years to WHA on the status of implementation of the Code. Anecdotal evidence of violations of the Code in Tanzania has

been presented but no previous studies have used formal sampling techniques to estimate the occurrence of violations in Tanzania at the HCF level. Monitoring, carried out by IBFAN Africa in 2002 (in Dar es Salaam and Arusha cities in the case of Tanzania) on the state of the Code and subsequent WHA Resolutions in Ghana, Tanzania and Zimbabwe, revealed that legislative or such other measures when effectively implemented, do reduce Code violations. The ensuing report, however, showed that violations still occurred, but considered that since Tanzania's law was strong better enforcement should halt those that still occur (IBFAN Africa and IBFAN/ICDC Penang, 2004) (Plate 1).

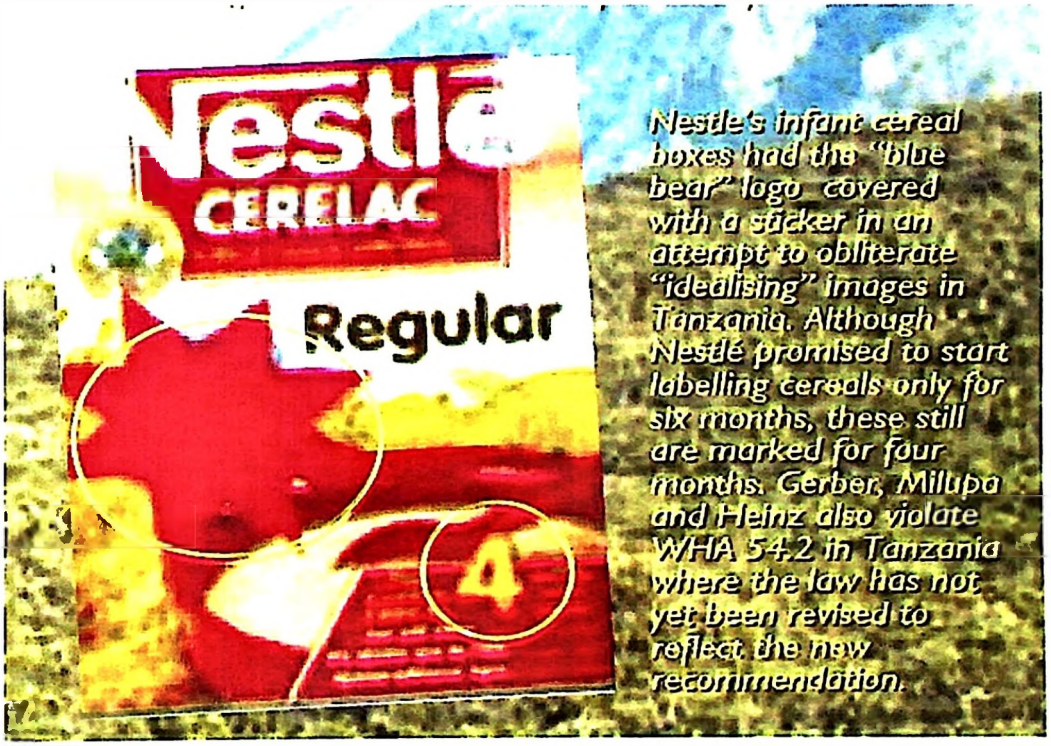

Plate 1: Evidence of reported violations of the International Code in Tanzania
Source: IBFAN Africa and IBFAN/ICDC Penang (2004).

CHAPTER THREE

3.0 METHODOLOGY

3.1 Location and Study Population

The study was conducted in Dar es Salaam and Morogoro regional urban centres. Dar es Salaam, the largest business city in Tanzania, is located at 6°20' S to 7°30' S,

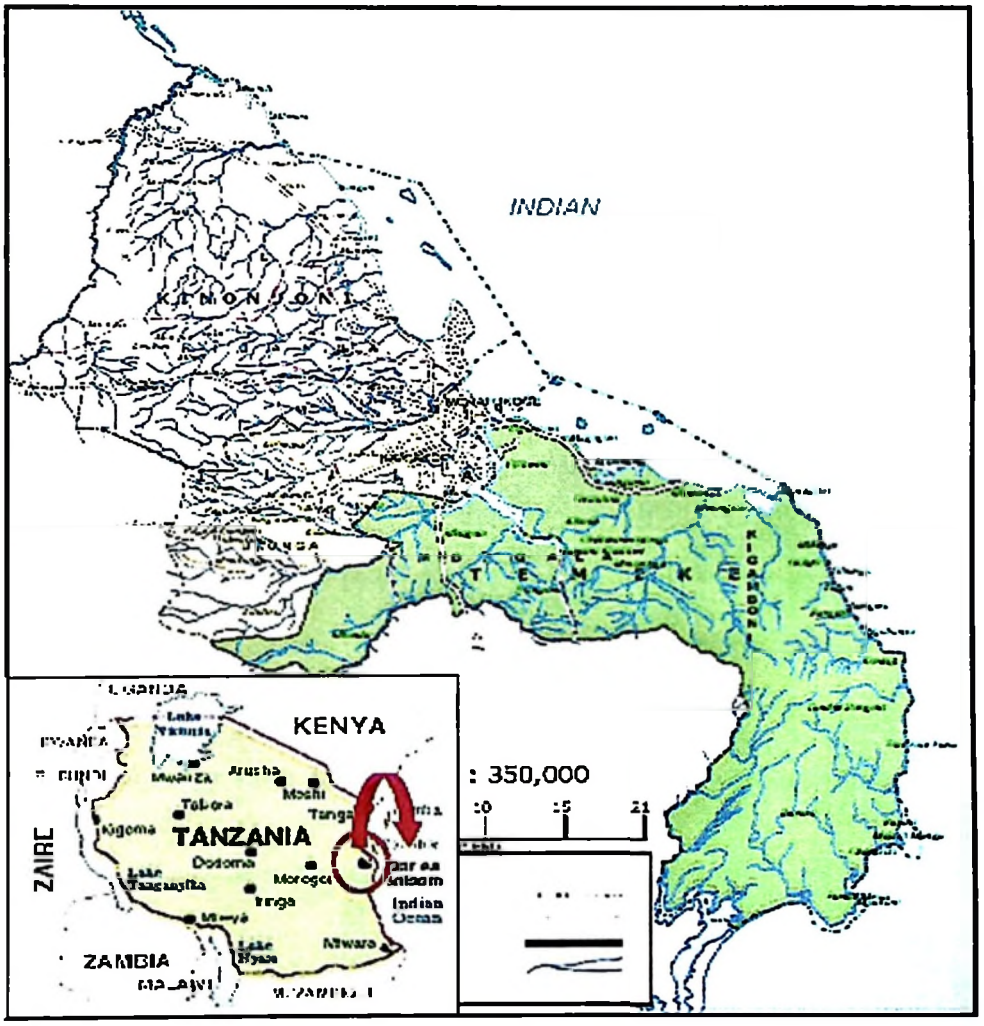

Figure 3: Map of Dar es Salaam City Council (Region) and its Municipalities (Districts). Morogoro Municipality lies to the West of Dar es Salaam.

Source: DCC (2004)

and 39°00' E to 39°30' E. It is situated on a coastal plain which is bordered by the Indian Ocean in the east, and slopes which lead to the higher Inland Plateau in the west. The city expands also into these hilly areas, along the arterial roads leading out of town (Bagamoyo road, Morogoro road, Pugu road and Kilwa road) (Dongus, 2000). While the total population of Mainland Tanzania is estimated to be 41,892, 895 (CIA, 2010), with most of the population (75%) residing in rural areas, about one tenth of this population (4,000,000) is estimated to live in the City of Dar es Salaam (Fig. 3).

Morogoro region is one of the 26 regions in Tanzania Mainland. The Region lies between latitude 5° 58" and 10° 0" to the south of the Equator and longitude 35o 25" and 35° 30" to the east. It is bordered by seven other regions. Morogoro Urban is one of the six districts of the region. It is a municipality, situated at the base of Uluguru Mountains, about 200 km to the west of Dar es Salaam. It is bordered to the north by the Morogoro Rural District, to the East by Pwani Region, to the South by the Kilombero District, and to the West by Kilosa District. Morogoro Municipality as a district has an urban population of 228,863 (URT, 2002). It is the centre of agriculture in the region with the Sokoine University of Agriculture based in the municipality. It is the commercial and transportation centre of the region and an important transit station for road and railway links to central and western Tanzania.

3.3 Study Design

The study was designed as an observational study at three municipal hospitals, and one private hospital, all in Dar es Salaam; one government hospital in Morogoro; two health centres, in Dar es Salaam and in Morogoro. The survey involved purposive selection of one group each of health workers, pregnant women and mother-infant pairs from labour

and neonatal wards, antenatal and postnatal clinics in the public (governmental) and private (non-governmental) hospitals and health centres. The Regional and District level hospitals selected for the study besides offering first contact and surgical and maternity services, are also the referral hospitals for the respective region or district. Similarly, the health centres selected provided health care services for ward level population. These were facilities for basic health care needs, offering first contact and maternity services (Reproductive and Child Health Centres). To be included in the study, sites had to be easily accessible by road, have at least one health facility and three distribution points (super-markets and/or food stores). The investigator used three data collection tools (structured questionnaires) built on previous experience by British Market Research Bureau (BMRB) Social Research (2007) with a number of modifications to reflect the particular requirements of the survey, to assess compliance with the International Code and the Tanzania National Regulations in health facilities.

3.3.1 Ethical approval

Ethical clearance was obtained from Sokoine University of Agriculture and permission to conduct the assessment was obtained from the respective authorities of the regional and municipal health institutions in Ilala, Temeke, and Kinondoni municipalities in Dar es Salaam Region and Morogoro municipality in Morogoro Region. Informed consent was also obtained from all interviewees in each health institution and all gave their consent to be interviewed anonymously while the names of their hospitals remained confidential.

3.3.2 Meeting the minimum requirements for optimal infant feeding

The Code was adopted as a minimum requirement to promote breastfeeding and protect mothers from pressure to use substitutes for breast milk, through the provision of adequate

information on appropriate infant feeding and the regulation of the marketing of BMS, bottles and teats.

3.3.3 Setting

Data was collected at a single-point-in-time without repetition, at health facilities in Ilala, Kinondoni, Temeke and Morogoro urban districts. The study population covered in the three interview groups was strictly confined to a single hospital setting per group in each district, on the basis of the hospital being the health worker's work station and care-seeking clientele's presence at the hospital, regardless of the respondent's place of domicile, due to the dynamics of city populations and accessibility of patient care. To be considered eligible for sampling, health facilities had to be large enough to see daily at least 15 pregnant women or 15 mothers of 15 infants who were not more than 12 months old.

3.4 Sampling Methods and Sample Size

For in-depth study, a purposive sampling method was employed to select the three district public (municipal) hospitals, one government (regional) hospital, two public health centres and one private hospital. The selection of the interview participants, was made such that only those respondents who best met the purpose of the study were chosen in addition, interviewed (Bailey, 1994). This activity took place between March and June 2009. The two health centres provided both antenatal and postnatal clinic services; however they did not provide delivery services. The centres chosen were representative of the entire population of the District or Region served by the respective health facility.

3.4.1 Recruitment of respondents/subjects

The study was designed to obtain a total sample of 360 health workers, pregnant women and mothers with their infants at seven health facilities, who were set for participating in the interview (i.e. 15 participants per group at each health facility). This number therefore comprised of set targets of 90 health workers, 90 pregnant women who had reported for delivery at the labour ward or routine antenatal clinic check-up and 90 infants ranging in age from 0 months to 12 months, paired with their 90 mothers. The infants, who had just been born in the maternity ward, sick or brought for routine well-child care were not supposed to answer any questions but were subjects in demonstration activities showing positioning and attachment during breastfeeding, and cup-feeding with either breast-milk or breast-milk substitutes. The images of the respective actions were captured by a digital camera. Both singleton and multiple birth infants were covered in this study, basing on their being covered under the Code (Articles 6.6 and 6.7; WHO, 1981), WHA Resolution 39.28 (ICDC, 2005) and WHA Resolution 47.5 (ICDC, 2005).

(i) Selection of health workers

The selection of the health workers depended on their being available and willing to participate in the interview. Health centres were staffed mostly by clinical officers, nurses and midwives, but interviews with staff at different levels of technical and administrative responsibility were sought.

(ii) Eligibility for pregnant women

Eligibility for the pregnant women group depended on women coming for routine antenatal clinic checkups or for delivery in the labour wards, and consented to having their postpartum information disclosed to Sokoine University of Agriculture. They were

systematically sampled according to their position in the waiting room (for example, every third consecutive woman was selected). The sampling frame excluded mothers whose infant was stillborn or experiencing a life threatening illness.

(iii) The infant-pairing mothers

The infant-pairing mothers group was obtained from mothers attending reproductive and child health clinic with a child less than or equal to 12 months of age or mothers bringing sick children to hospital for treatment. Accordingly, they were also systematically sampled according to their willingness to participate and age of the child. All efforts were made to maintain consistency in duration for the individual interviews so as not to disrupt the clinic check-up activities.

3.4.2 Interview Procedure

Data was collected using three sets of structured questionnaires. A single questionnaire was administered to each respondent. The questionnaires were written in English but the interviews were conducted in Kiswahili except for a few non-Kiswahili speaking respondents who spoke English. The data was recorded in English. Face and content validity were established by pre-testing each instrument on a pilot sample of 15 eligible respondents (45 in total) from Ilala District and as a result the formats of the questionnaires were modified to make it easier to complete them and additional questions were added to ensure sufficient data to provide valid results.

The interviews were administered individually with participants in a quiet and comfortable designated area. For consistency, all interviews were conducted by a single interviewer (the investigator) and lasted approximately 30 minutes. Compliance with requests to interview was 100%. The infant's age range was limited to a maximum of 12 months to

comply with the definition of an infant, with focus on optimal aspects of breastfeeding and complementation practices in compliance/non-compliance with Code. Chart records of the infants' weights as measured by the public health nurses in the centers were used (Plate 2). In addition, brief field notes were also made during the interviews.

Plate 2: Chart records of the infant's weight as measured by public health nurses

(i) Interview with health care workers

The interviews for the health personnel were conducted in a room made available to the interviewer. Professional health staffs who were working in pediatric inpatient wards, pediatric outpatient wards, the delivery suite, antenatal and postnatal care wards on the day that the interviews were conducted were included in the study. Specialist medical consultants, such as family medicine specialists, who were neither Pediatricians nor Obstetricians, were also included in the study as they might be involved in routine breastfeeding consultations. Few laboratory staff and medical attendants were also included. This was in line with the Code provision that defines a "Health worker" as a person working in a component of such a health care system, whether professional or non-professional, including voluntary unpaid workers.

At the beginning of the questionnaire health workers were asked whether they were aware about the existence of the Code/National Legislation, relevant WHA resolutions and/or Codex/Tanzania Standards on infant foods. Among other aspects, the health workers were also asked how the companies were promoting formula in their hospitals, if at all, and whether they themselves had ever received any gifts, free samples or sponsorship from the companies. Compliance with the International Code for information given to health workers was evaluated using a series of questions.

(ii) Interview with pregnant women

The questionnaire used for pregnant women also captured demographic characteristics and asked whether they had received counselling on optimal infant feeding practices based on the Code. The questionnaire also checked whether they had received free samples of substitutes for breast milk (including infant formula) designed to meet the nutritional needs of the anticipated infants from birth to 6 months of age. The check included samples of follow on formula designed to replace infant formula at the age of 6 months, and complementary foods for infants aged 6 months), as well as bottles, or teats. The source of the free sample was also determined when it had been given to the women.

(iii) Interview with mothers

The questionnaire used for mothers with infants to collect information for the study included questions that addressed socio-demographics, birth experience, use of postpartum services, infant feeding, infant health and safety, health and social services, supports, as well as parental health and lifestyle factors.

3.5 Data Processing and Statistical Analysis

The data collected were coded, entered and statistical analyses performed using the Statistical Package for Social Sciences for Windows (SPSS 12.0 for Windows). Descriptive statistics and frequencies were used to describe the response rates and characteristics of each sample (Garson, 2009).

3.6 Limitations of the Study

Some of the information gathered from pregnant women and lactating mothers was determined from the women's and mothers' retrospective reports. One of the main limitations in this study therefore, is recall bias, since some of the mothers might not remember the events that took place when their infants were born. Respondents may provide answers based on social desirability which may represent the actual accuracy of the topic involved.

CHAPTER FOUR

4.0 RESULTS AND DISCUSSION

4.1 Health Facilities and Respondents

4.1.1 Characteristics of facilities

All seven health care facilities were visited and surveyed as targeted: five health facilities in Dar es Salaam City and two in Morogoro Municipality. Of the seven health facilities targeted and surveyed, six facilities had the status of public ownership and one had the status of private ownership. Over a quarter (28.5%) of the facilities were health centres, nearly half (42.9%) were district hospitals, functioning like referral or general hospitals for the districts, 14.2% were both government and regional hospital and 14.2% were both private and a University teaching hospital.

4.1.2 Characteristics of sample/respondents

The response rate for all respondents was 100%.

Socio-demographic Characteristics (SDC) of health care workers

The interview of health care workers involved 90 respondents, comprising of 15 workers from each HCF except one. All HCFs were urban-based. The respondents were engaged for interview as they became available. The distribution of respondents shown in Table 1 was reflected in the responses at the hospitals in each district, accordingly. All-in-all, Obstetricians Gynaecologists and Dieticians and Pediatricians were relatively very few or lacking in most of the HCFs. These are the professionals one would expect to find in adequate numbers working in the pediatric inpatient wards, in the delivery suite and postnatal care, the antenatal wards, and in the pediatric outpatient wards addressing matters of IYCF and the associated contraindications. Manji (2008) reported that there was an estimated shortage of 35,000 health workers nationally, in Tanzania (Manji, 2008).

Table 1: Distribution of health workers by occupation and by district

Occupation/Profession	District							
	Ilala		Temeke		Kinondoni		Morogoro	
	n	% of sample	n	% of sample	n	% of sample	n	% of sample
Pediatrician	1	3.3	1	6.7	0	0	1	3.3
Gynaecologist/Obstetrician	1	3.3	0	0	0	0	0	0
Consultant Pediatrician	1	3.3	0	0	0	0	0	0
Consultant OBS/GYN	1	3.3	0	0	0	0	0	0
Clinical/Medical Officer	4	13.3	1	6.7	2	13.3	6	20.0
Assistant Medical Officer	2	6.7	1	6.7	1	6.7	1	3.3
Intern Doctor	0	0	1	6.7	1	6.7	0	0
Nurse/Midwife	2	6.7	8	53.3	8	53.3	6	20.0
Nursing Officer	14	46.7	2	13.3	3	20.0	9	30.0
Public Health Nurse	2	6.7	0	0	0	0	1	3.3
Student Nurse	0	0	0	0	0	0	1	3.3
Dietician	1	3.3	0	0	0	0	0	0
Manager Pharmacy Services	1	3.3	0	0	0	0	0	0
Laboratory Technician - cum Nutritionist	0	0	1	6.7	0	0	0	0
Assistant Nurse	0	0	0	0	0	0	1	3.3
Nursing Auxiliary	0	0	0	0	0	0	2	6.7
Medical Attendant	0	0	0	0	0	0	2	6.7
Total	**30**	**100.0**	**15**	**100.0**	**15**	**100.0**	**30**	**100.0**

Nurse/Midwives and Nursing Officers made the majority of the respondents in each district, although their numbers compared to the workload appeared to be inadequate.

4.2 Awareness of Health Care Providers and Application of the International Code/National Regulations

4.2.1 Awareness of the International Code and the National Regulations by health worker

A total number of 90 health providers were interviewed in Dar es Salaam and Morogoro regions to gather information on their awareness and knowledge about the Code. In Table 2(a), in overall response, the survey showed that the majority of health workers, which was 87.8%, were not aware of the existence of the WHO Code.

Table 2 (a): Awareness of health workers of the International Code and the National Regulations by working experience

Awareness and years of working experience		Percentage	
		Yes	No
International Code			
	< 1	2.2	21.1
	1 – 4	2.2	32.2
	5 - 10	4.4	15.6
	> 10	3.3	18.9
National Legislation			
	< 1	2.2	21.1
	1 – 4	2.2	32.2
	5 - 10	6.7	13.3
	> 10	6.7	15.6

Table 2(b): Awareness of the International Code and National Legislation by District

Awareness by District		Percentage	
International Code		Yes	No
	Ilala	33.3	66.7
	Temeke	0.0	100.0
	Kinondoni	6.7	93.3
	Morogoro Urban	0.0	100.0
National Legislation			
	Ilala	43.3	56.7
	Temeke	0.0	100.0
	Kinondoni	6.7	93.3
	Morogoro Urban	6.7	93.3

Table 2(b) shows that those health workers who were aware of the NRs, which was 12.2%, were more likely to be aware of the Code as well, which was 17.8%, as shown in Table 2(a). This becomes clearer in Table 2(b) where the analysis was made by district. Thus, the results in Table 2(b) reveal that all 15 health providers interviewed in Temeke District and all 30 (100%) in Morogoro Urban District were not aware of the Code. In Kinondoni District, only one (6.7%) of the 15 respondents was aware of the Code and the same one was aware of the National Regulations. In Ilala District 33.3% were aware of the Code. Only 2 of the 11 (18.2%) who had heard about the Code had participated in some formal training about the Code, and also only 2 of the 11 had learned about the Code through the Baby Friendly Hospital Initiative. In this regard, during the interview, on one hand, Pediatricians who worked in Neonatal Infant Care Units (NICUs) by training appeared to have more knowledge of neonatal nutrition and they were more likely to choose breast milk as the best nutrition. Obstetricians and General Practitioners, being less familiar with neonatal nutrition, were more likely to consider infant formula as satisfactory nourishment for the neonate. So, these together with the Nurses and Midwives who made

the majority of the professionals expressed an interest in additional information on the Code and suggested education as a way to address the lack of awareness prevailing among them.

The survey results showed that most respondents in HCFs (82.2%) were also not aware of the existence of the NRs for marketing of BMS and designated products in Tanzania. Experienced health workers were more likely to be aware of the law than their less experienced colleagues (Table 2a).

4.2.2 Awareness of health workers of the International Code and the National Regulations by working experience

Analysis of years of working experience indicates that older health workers (5-10 years of experience) had awareness of the Code (4.4%) and the NRs (6.7%) and hence more understanding of the importance of breastfeeding, that breast milk is the best choice for the neonate. Fewer, younger health workers (1-4 years of experience) were aware of the Code and the NRs (2.2%), and hence importance of breastfeeding. These, at the same time constituted the highest percentage of the total (34.4%). This indicates that there is an urgent need to educate health personnel at all levels as well as future health workers on the role of the Code and NRs on optimal infant feeding practices. Temeke District, appeared to be completely blank, 100%, which is all health workers being totally unaware of the Code as well as the NRs (Table 2b).

Ilala District in general seemed to be more aware especially because the district hospital had in the past been designated baby friendly through the Code-based, BFHI. Compliance with the Code is required for health facilities to achieve baby friendly status, which is reviewed annually to check sustained compliance (NZBA, (2010)). Awareness level

among health workers could be improved through further training. However, the Regulations were being violated not merely because health workers were unaware of the National Regulations. The study found out that some health workers were breaching the law despite being aware of it. This could be explained by the non-implementation of any of the sanctions stated in the regulations against violators. In most hospitals, tins of infant formula, feeding bottles and teats and in a few cases, pacifiers could be seen as one walked through the maternity and pediatric wards (Plates 3-7), implying that hospital authorities had no practical rules and regulations in place to implement and monitor the regulations in their institutions (Plates 6, 7, 8, 9 Plate 10). Health authorities should promote breastfeeding in the hospitals, but not bottle feeding.

Plate 3: A mother in a Pediatric Ward found feeding sick child with Infant Formula. A feeding bottle with a teat can be seen at the bed in the foreground in violation of Article 6.3 of the Code

Plate 4: Infant Formula container for Lactogen-1 and feeding bottle with liquid infant formula found displayed openly beside the baby at the bed of a breastfeeding mother in a maternity ward, thus adverting BMS and promoting bottle-feeding versus breastfeeding, in violation of Article 6.3 of the Code

Plate 5: Lactogen-1 Infant Formula container and feeding cup found displayed at a window seal in the maternity ward, thus advertising BMS in violation of Article 6.3 of the Code

Plate 6: Twin babies in a maternity ward with bottled infant formula displayed openly beside them, thus promoting bottle-feeding versus breastfeeding, in violation of Article 6.3 of the Code

Plate 7: Tin of Infant Formula milk powder (S-26), cups and two pairs of syringes, in the open at bed of pregnant woman, ready for feeding newborn baby artificially. She had been required by health care personnel to bring along these items for the day of her delivery, thus promoting BMS against breastfeeding, in violation of Articles 6.3 and 7.4 of the Code

4.3 Donations to Health Facilities and Health Workers

4.3.1 Promotion of Breast Milk Substitutes (BMS) to health care workers and to mothers by manufacturers

Results in Table 3 indicate that industry had been carrying out promotion of BMS to health care workers and to mothers in all four districts surveyed. Ilala District was the most affected with more than 15% of promotional cases, followed by Morogoro Urban District, with 10%. The most common promotional methods used were by visits of company representatives of BMS manufacturers and distribution of BMS products to mothers. Such visits and product samples distributed to mothers and health workers tend to establish close relationship between manufacturers of infant formula and hospitals, thus ensuring that new mothers have ready access to infant formula leading to unnecessary supplementation with formula and eroding support for breastfeeding. In Ilala District, single occasions of promotion of BMS to health workers and mothers by way of company posters; visits by industry representatives; and distribution to mothers, of 'pampas' nappies with picture of bottle-feeding baby on them, at health care facilities by manufacturers or representatives were reported during the survey. In Kinondoni District there was one occasion of a visit made by industry representatives, while in Morogoro Urban District there was one case of use of company posters and two cases of visits of baby food industry representatives to health care facilities to promote BMS (Table 3). Further, the interview revealed that the proportion of promotion to health facilities in Temeke and Kinondoni Districts by way of free samples of infant formula received for distribution to respective wards was 13.3% in each district.

Table 3: Proportion of promotion of BMS by industry to health workers and mothers in health care facilities and methods of promotion by district

Proportion of promotion of BMS to health care workers and mothers by District		Percent	
		Yes	No
Proportion of promotion to health care workers by district			
	Ilala	6.7	93.3
	Temeke	6.7	86.7
	Kinondoni	13.3	86.7
	Morogoro Urban	6.7	93.3
Mothers			
	Ilala	16.7	80.0
	Temeke	13.3	80.0
	Kinondoni	13.3	86.7
	Morogoro Urban	10.0	86.7

Methods used and proportion of promotion of BMS by district		Percent
Ilala	Company posters	3.3
	Visits of industry representative	3.3
	Pampas nappies with picture of baby bottle-feeding, distributed to mothers	3.3
Temeke	Free orders/samples for distribution to respective wards	13.3
Kinondoni	Visits of industry representative	6.7
	Free orders/samples for distribution to respective wards	13.3
Morogoro Urban	Company posters	3.3
	Visits of industry representatives	6.7

4.3.2 Infant formula or other products given for free or subsidized to mothers

The study shows that almost two thirds of the 75 health workers interviewed (64%, n = 48), said that their health care facilities had provided free infant formula or other products to mothers when the newborns were still in hospital (Table 4; Plate 11; Plate 12). This indicated that manufacturers of breast milk substitutes were in this way using national

healthcare systems in Tanzania indirectly to promote their products, in violation of Article 6.7 of the Code, which was strengthened in May 1994 by a WHA Resolution. The Resolution urged member states to ensure that there were no donations of free or subsidized supplies of breast milk substitutes in any part of the health care system (WHA 47.5). The negative effect on breast feeding of giving free samples of breast milk substitutes to mothers is well documented (Aguayo *et al.*, 2003). Supplemental feeds to breastfed newborns negatively impact overall infant health as well as breastfeeding outcomes (Blomquist *et al.*, 1994). Distributing samples of infant formula to new mothers during the hospital stay has been demonstrated by a Cochrane review to negatively affect breastfeeding. There appears to be a disproportionate negative impact of distributing formula samples on mothers who are particularly vulnerable, which includes those who are *primiparous (*first-time mothers), less educated, or ill during the postpartum period (Shealy, 2005).

As shown in Table 4, in each district the health care service was the most common source of free or subsidized samples of BMS received by pregnant women and mothers, in contravention of Article 7.4 of the Code. The free samples included commercial brands of BMS, such as Starter Infant Formula (Lactogen-1, S-26[1], SMA-1, and NAN) as well as non-commercial BMS products such as ready-to-take prelacteal foods (diluted cow's milk, and very thin maize-flour porridge) supplied by the HCF and relatives. The nutrient density of such prelacteal feeds is low and the preparation and feeding practices are often unsafe (MOHSW, 2008). Besides, the practice of feeding of infants with all these breast milk substitutes was unnecessary if only the mother could have been assisted by health care providers/the community to initiate breastfeeding.

Table 4: Proportion of infant formula or other products given for free or subsidized to mothers

Health Care Facility	Infant Formula/Other Product	Percent
AA	Lactogen-1	33.3
	S-26(1)	66.7
BI	S-26(1)	100.0
AM	Lactogen-1	50.0
	S-26(1)	7.1
	SMA-(1)	7.1
	NAN	7.1
	FM 85	28.6
TE	D5%/D10%	15.4
	Lactogen-1	30.8
	S-26(1)	23.1
	F-75/F-100	15.4
	RUTF – Plumpy nut	15.4
MA	D5%/D10%	26.7
	RUTF – Plumpy nut	20.0
	Cow's milk, diluted, ready to take	20.0
	Cow's milk, ready to take, undiluted	13.3
	Maize meal/finger millet porridge	20.0
ML	D5%/D10%	6.7
	Lactogen-1	20.0
	S-26(1)	6.7
	F-75/F-100	26.7
	Cow's milk, diluted, ready to take	26.7
	Maize meal/finger millet porridge	13.3

Note: **AA** means, Amana Hospital, in Ilala District;
BI means, Buguruni Health Centre, in Ilala District;
AM means, The Aga Khan Hospital, Dar es Salaam;
TE means, Temeke District Hospital;
MA means, Mwananyamala District Hospital;
ML means, Morogoro Regional Hospital

Plate 8: **A mother with newborn, ready to feed with Infant Formula, in a nursery. Though feeding was done away from the public eye and under adequate sanitary conditions, the practice of feeding such infants artificially was unnecessary. The mother could have been assisted by health workers/the community to initiate breastfeeding**

Plate 9: **A mother feeding her newborn with artificial milk (Infant Formula) from a cup in a nursery at a hospital in Dar es Salaam, for the apparent reason of 'dryness' of her breasts.**

4.4 Informational or Educational Materials in Health Care Systems

None of the health facilities was found to have any educational or promotional materials produced by manufacturers of breast milk substitutes. Instead, there were information materials in forms of posters, brochures and leaflets in some of the maternity, labour, pediatric wards and neonatal, premature or nursery units, received from the MOHSW and relevant government and non-governmental agencies (Table 5). These materials contained factual information on the benefits of breast feeding and on the negative effects of introducing breast milk substitutes and the difficulty of reversing the decision not to breast feed. However, in all health facilities surveyed, the authorities provided information to mothers recommending the best brands of infant formula for their infants when it deemed fit, including purchase of formula brands (to as far as above 90% of the sample population) and fresh cow's milk, by the HCF. Some of these breast milk substitutes were actually already accommodated in the costs of hospitalization before and after delivery (Table 4; Table 5). It should be noted with emphasis that the manufacturers of BMS make extensive use of health care facilities to promote their products covertly and overtly, and at the same time make direct marketing efforts that involve health care professionals to promote their products. The study found out during the interview that the top two sources of such information about infant feeding were Nurses/ Midwives and Doctors. Thus, the opinion of health workers was the most important factor influencing mother's decision to choose a particular formula or supplement brand for artificial feeding, instead of being given professional support including counselling and encouragement, on management of lactation crises (Table 13; Table 14a; Table 14b). Thus, avoiding manufacturers marketing pressure on pediatricians, dieticians and other health workers is especially important in terms of eliminating the chance of mothers stopping breastfeeding due to the advice of a doctor or other health worker representing the interests of one manufacturer or another. Similar findings were obtained in a study conducted in Ukraine (SMC, MOHU and UNICEF, 2004).

Table 5: Types and proportion of information given to mothers of infants by HCF

HCF	Type of information given to mothers	Percent
AA	List of Infant Formula brands on the market	28.6
	BMS presented as the feeding option based on AFASS	14.3
	Lactogen-1/S-26(1) recommended by HCF	14.3
	Advice to PMTCT-1 mothers not to engage in Mixed Feeding	42.9
BI	List of Infant Formula brands on the market	100.0
AM	List of Infant Formula brands on the market	38.5
	BMS presented as the feeding option based on AFASS	7.7
	Lactogen-1/S-26(1) recommended by HCF	30.8
	Advice to PMTCT-1 mothers not to engage in Mixed Feeding	15.4
	Guidelines on method of preparation and use of BMS	7.7
TE	BMS presented as the feeding option based on AFASS	23.1
	Lactogen-1/S-26(1) recommended by HCF	46.0
	Guidelines on method of preparation and use of BMS	15.4
	Lactogen-1 recommended by HCF for post-scissor babies; S-26(1) recommended for babies of PMTCT-1 mothers	7.7
	RUTF; F-100 given under Doctor's prescription to malnourished babies basing on Body Weight	7.7
MA	BMS presented as the feeding option based on AFASS	6.7
	Lactogen-1/S-26(1) recommended by HCF	93.3
ML	List of Infant Formula brands on the market	27.3
	BMS presented as the feeding option based on AFASS	54.5
	Guidelines on method of preparation and use of BMS	18.2
UU	List of Infant Formula brands on the market	6.7
	BMS presented as the feeding option based on AFASS	13.3
	Guidelines on method of preparation and use of BMS	80

Note: **AA** means, Amana Hospital, in Ilala District;
BI means, Buguruni Health Centre, in Ilala District;
AM means, The Aga Khan Hospital, Dar es Salaam;
TE means, Temeke District Hospital;
MA means, Mwananyamala District Hospital;
ML means, Morogoro Regional Hospital;
UU means, Uhuru Health Centre, Morogoro

4.5 Counselling and Marketing Information aimed at Pregnant Women and Mothers

4.5.1 SDC of pregnant women

In all districts younger women were under represented in the sample (Table 6) because, going by the 2004-05 TDHS, in the population, one fourth of women in the age group of 15-19 years have begun child bearing (NBS Tanzania and ORC Macro, 2005). One fifth were already mothers and seven percent were pregnant with their first child. The percentage of women aged 15-19 years who had begun child bearing have remained constant over the past 15 years according to the results of the 1991-92, 1996, and 2004-05 TDHSs and the 1999 TRCHS (NBS Tanzania and ORC Macro, 2005). In Ilala District, pregnant women aged under 20 years constituted only 10% of the sample compared with 25% of the population. Similarly, in Kinondoni pregnant women aged 30 or over constituted 46.6% of the pregnant women in the survey. The under-representation could be explained by the fact that quite a number of pregnant women in urban areas (about 25%) make only 2-3 antenatal care (ANC) visits and 20% made the first visit at the fourth month of pregnancy (NBS Tanzania and ORC Macro, 2005).

Temeke District and Morogoro Urban had the highest proportion of pregnant women aged 24 years of age and below (46.7%), the older proportion at 35 years of age and above being 13.4% and 6.7%, respectively (Table 6).

4.5.2 SDC of mothers

In this group, 32.2% of all respondents were women aged 20 to 24 years (this being the largest proportion), 30% were 25 to 29 years, 17.8% were 30 to 34 years and 10% were 35 years and older. Less than 10% were under 20 years of age (Table 6).

Table 6: Distribution of sample population by pregnant woman's and mother's age

Distribution by pregnant woman's age by district		
District	**Age range**	**Percent**
Ilala	Under 20	10.0
	20-24	26.7
	25-29	20.0
	30-34	40.0
	35-39	3.3
Temeke	Under 20	6.7
	20-24	40.0
	25-29	20.0
	30-34	20.0
	35-39	6.7
	40 or over	6.7
Kinondoni	Under 20	6.7
	20-24	2.0.0
	25-29	26.7
	30-34	33.3
	35-39	13.3
Morogoro Urban	Under 20.0	10.0
	20-24	36.7
	25-29	23.3
	30-34	23.3
	35-39	6.7

Distribution by mother's age and by all districts	
Age range	Percent
Under 20	8.9
20-24	32.2
25-29	30.0
30-34	17.8
35-39	6.7
40 or over	3.3
don't know	1.1

4.5.3 Prenatal classes

At this stage of the survey, all 90 pregnant women and 90 mothers in their respective sample populations were asked about the antenatal/prenatal care they received. Those who had attended antenatal check-ups or classes or who had some contact with health professional staff were asked whether feeding had been discussed with them. This activity initially looked at the antenatal care received by the pregnant women and mothers when they were pregnant with their current baby, before specifically examining the feeding advice they received during their pregnancy.

4.5.4 SDC of pregnant women and mothers who attended prenatal classes

Across the districts, only 17.7% of all pregnant women said that feeding had been raised in some way at their antenatal check-ups, whether this was simply being asked how they planned to feed their baby or whether it was a discussion about baby feeding. The majority (62.5%) of those who attended the classes or discussions on infant feeding were between 20-29 years of age, with the level of attendance falling as age increased. About three quarters (72.2%) of pregnant women had not had any discussion about infant feeding, with the majority in the age group 30-34 (32.3%) years of age, followed by those in the age groups 20-24 (27.7%), 25-29 (23.1%) and under 20 (10.7%) years of age (Table 7). It was observed during the interviews that the need for infant feeding education in the maternity ward was great, not only because of such a big number of pregnant women who did not discuss or receive any education about feeding (72.2%), but more so because more than 10.7% of those who missed the classes were simply children (under 20 years of age) waiting to give birth to children (Table 7). This under-age group comprised 10.7% of the pregnant women in the study, for Ilala and Morogoro Urban districts (Table 6). Further, even for the pregnant women found to be in the right age group for child bearing, the

majority (66.7%) of them were first-time mothers (Table 8a). These results indicate that there was a missed opportunity on early intervention with women of child bearing age to educate them about appropriate IYCF practices. The window of opportunity for improving nutrition is small—from pre-pregnancy through the first two years of life. There is consensus that the damage to physical growth, brain development, and human capital formation that occurs during this period is extensive and largely irreversible (WB, 2006).

Table 7: Attendance of prenatal classes about infant feeding by pregnant women and mothers during pregnancy with current baby by age and by all districts

Attendance of prenatal classes about infant feeding by age of pregnant women and by all districts		
	Percentage	
Age group in years	**Yes**	**No**
under20	0.0	10.8
20-24	7.7	27.7
25-29	7.7	23.1
30-34	6.2	33.3
35-39	3.1	4.6
40 or over	0.0	1.5
Attendance of prenatal classes about infant feeding by mother's age during pregnancy with current baby		
under20	3.6	10.9
20-24	16.4	36.4
25-29	23.6	25.5
30-34	10.9	18.2
35-39	7.3	3.6
Don't know	1.8	0.0
40 or over	0.0	5.5

Mothers who had attended antenatal classes while pregnant with current baby were also asked whether the classes had included any discussions on feeding. Across the districts, 38.8% responded in the affirmative, while 61.1% responded negatively. The majority of those mothers who attended classes fell in the age group 25-29 (37.1%) years followed by those in the age group 20-24 (16.4%). The mothers who did not participate in such discussions were mostly in the age groups 20-24 (36.4%), 25-29 (25.5%) and 30-34 (18.2%) years of age (Table 7).

4.5.5 Ante-natal advice received on breastfeeding

The investigator interviewed 90 pregnant women, of whom at least two in ten pregnant women (22.2%) had more than one child (Table 8(a)), and therefore, had previous experiences of pregnancy, and of infant feeding as well. About two-thirds of all pregnant women (66.7%) were either pregnant for the first time or did not have children or their child had died. The interviews revealed that no pregnant woman or mother identified, or had been approached by representatives of manufacturers of breast milk substitutes to provide her with information and counselling on infant feeding, in either Dar es Salaam or Morogoro. However, the investigator found that at one (14.3%) HCF in Dar es Salaam, it was common practice for pregnant women to be instructed by health workers during ANC visits that they should make sure that on the day of delivery they had among other items, a tin of a recommended brand of infant formula for feeding their baby immediately after delivery and during the days of hospitalization (Plate 7).

(i) Proportion of pregnant women who received advice about the health benefits of breastfeeding

According to the results in Table 8b, only 3.3% of pregnant women in Morogoro had received some advice on health benefits of breastfeeding of the baby during their ANC

visits. Only one woman identified the nurse/midwife as the main source of counselling. In Temeke 6.7% of the pregnant women had received advice and the sole source was from a nurse/midwife. In Kinondoni District 13.3% of the pregnant women received advice, and identified the nurse/midwife as the only source of advice. In Ilala District 16.7% of the pregnant women received advice and the subjects identified the nurse/midwife as the main source of counseling on the health benefits of breastfeeding. One identified the Doctor as the source, and one identified newspapers/magazines/books/leaflets/posters as the main source of advice/information (Table 8c; Plates 10-19).

Table 8: Proportion of pregnant women with children and who received advice about the health benefits of breastfeeding and source of advice

(a) Proportion of pregnant women by number of children

Number of children	Percent
one child	14.4
two children	7.8
three children	8.9
four children	1.1
five children	1.1

(b) Proportion of pregnant women who received advice by District

	Percent	
District	Yes	No
Ilala	16.7	73.3
Temeke	6.7	86.7
Kinondoni	13.3	86.7
Morogoro Urban	3.3	90.0

(c) Proportion of source of advice by district

District	Source of advice	Percent
Ilala	Doctor	3.3
	nurse/midwife	10.0
	newspapers/magazines/books/leaflets/posters	3.3
Temeke	nurse/midwife	6.7
Kinondoni	nurse/midwife	6.7
Morogoro Urban	nurse/midwife	3.3

Plate 10: **Poster posted on walls of maternity blocks, labour wards and NICUs at most of the health care facilities visited during the study, displaying messages on the health benefits of breast-milk, in Kiswahili**

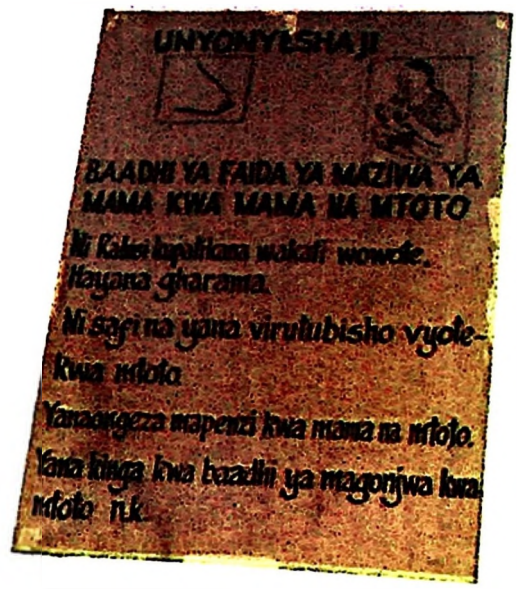

Plate 11: **Poster displaying messages on the health benefits of breastfeeding to the infant and to the mother, in Kiswahili**

(ii) Proportion of mothers who received advice about the health benefits of breastfeeding while pregnant with current baby and the source

The investigator also interviewed 90 mothers with babies aged not more than 12 months in all four districts, to gather information on their main sources of information and counselling on breastfeeding. Five in ten (50%) mothers in Morogoro Urban District had received some advice during their pregnancy about the health benefits of breastfeeding, with the nurses/midwives being the most common source of such advice. The rest (50%) said that nobody gave them advice on how to feed their infants. In Ilala District 16.7% of the mothers received such advice, notably from nurses/midwives as well, while others

were counselled by their own mothers, mothers-in-law, the doctor and others got advice from newspapers/magazines/books/leaflets/posters and from seminar (Table 9; Plates 10-19). Temeke and Kinondoni Districts had 13.3% each, of the interviewed mothers who received advice about the health benefits of breastfeeding, mainly from nurses/midwives and doctors, respectively (Table 9).

Table 9: Proportion of mothers who received advice about the health benefits of breastfeeding while pregnant with current baby and the source of advice by district

Proportion of mothers who received advice by district		
District	**Percentage**	
	Yes	**No**
Ilala	16.7	80.0
Temeke	13.3	86.7
Kinondoni	13.3	86.7
Morogoro Urban	50	50
Source and proportion of advice received by district		
District	Source of advice	Percent
Ilala	mother	6.7
	mother-in-law	3.3
	doctor	3.3
	nurse/midwife	13.3
	newspapers/magazine/book/leaflet/poster	3.3
	something taught at seminar	3.3
Temeke	mother-in-law	6.7
	nurse/Midwife	33.3
Kinondoni	doctor	13.7
	nurse/midwife	6.7
	TV/radio	6.7
Morogoro	mother	3.3
	other family member	6.7
	doctor	10.0
	nurse/midwife	36.7

(iii) Sources of advice about the health benefits of breastfeeding

Approximately 41% of the mothers had received some advice during their pregnancy about health benefits of breastfeeding, mainly via nurses and midwives who were mentioned by 56.8% of all mothers who had received any advice (Table 9; Plate 12).

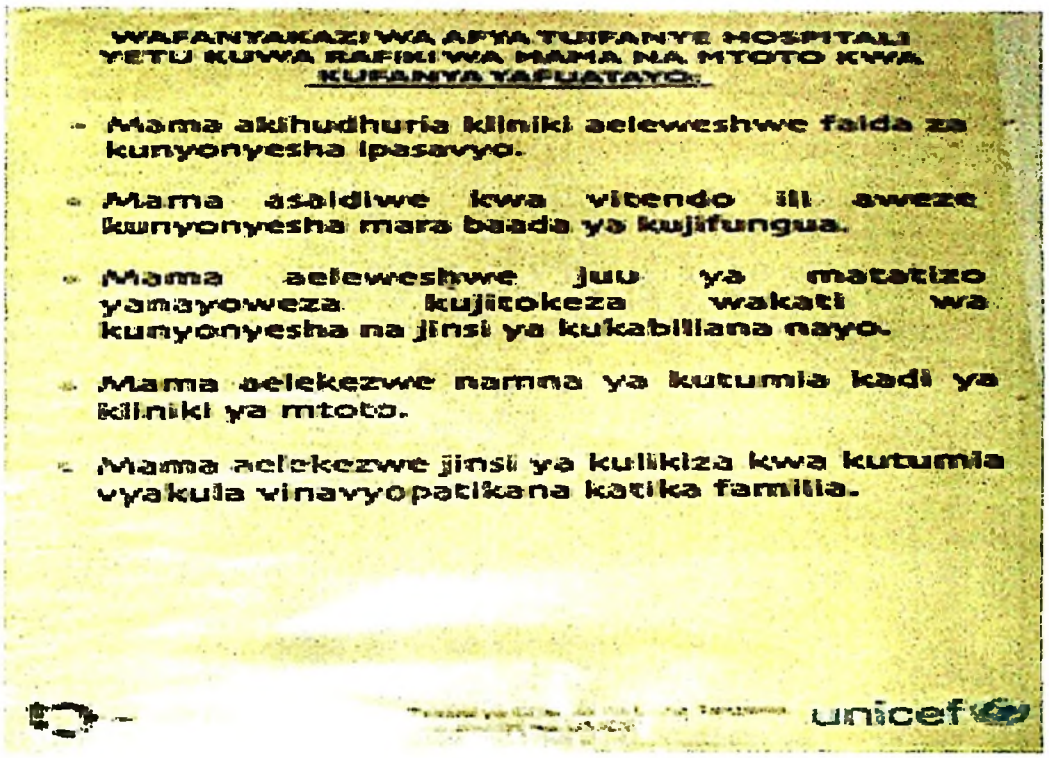

Plate 12: Part of the advice/counselling given to mothers by way of posters at the maternity and labour wards. No monitoring and evaluation had been done to assess impact. In Ilala District only about 3% got advice from the print media

4.5.6 Publications available to mothers

A number of brochures offering advice on pregnancy, breastfeeding and health were made available to new mothers and seen at a few of the health care facilities surveyed. These were take-home brochures written in English and Kiswahili (QAP, 2007), on:

1. How to breastfeed your baby – with an illustrated guide and detailed step-by-step instructions on how to start and continue breastfeeding. It provided information on how to recognize and prevent problems, listing signs to look for, and identifying what mothers need to remember and know (Plate 13).

Plate 13: How to breastfeed your baby
Source: QAP (2007)

2. How to hand express breast-milk – an illustrated brochure that graphically depicts and provides mothers with instructions on how to hand express breast milk. It includes points to remember and tells mothers how to safely store and feed the milk to the baby. This method is being promoted for use by HIV-positive mothers during the transition from exclusive breastfeeding to replacement feeding in order to minimize the dangerous period of mixed feeding (Plate 14).

Plate 14: How to hand-express breast-milk

Source: QAP (2007)

3. How to heat-treat breast-milk – the brochure shows how to safely heat breast-milk (Plate 15). Both fresh and pasteurized human milk help lower rates of infections (UNICEF, 2006).

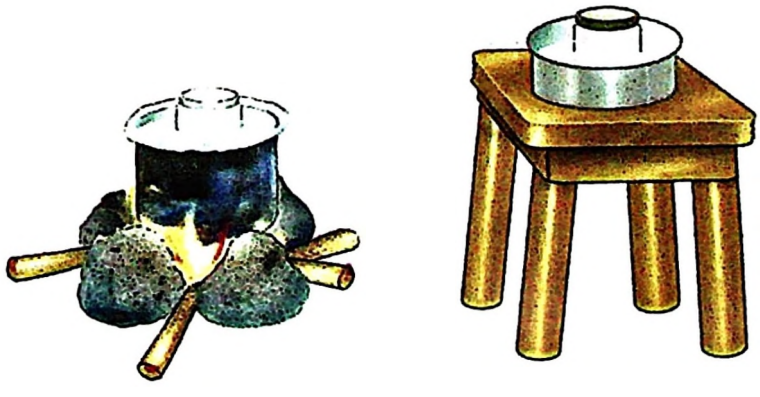

Plate 15: How to heat-treat breast-milk

Source: QAP (2007)

4. How to feed your baby fresh cow milk: Liquid cow's milk is not recommended to be given to infants as a main drink until they are a year old and at this age only full-fat milk is recommended. Semi-skimmed milk is not recommended for infants until they are two years old, while skimmed milk should not be given to children under five years old. However, it is acceptable to introduce cow's milk to mix in foods that are prepared for the baby from the age of six months. Other types of milk such as goat's milk and sheep's milk are not recommended to be given as drinks until infants are a year old.

However, in this brochure, HIV-positive mothers who opt to feed fresh cow's milk to their babies are given a complete list of steps and ingredients needed for safely modifying and feeding fresh cow's milk to babies. The brochure outlines how to make fresh cow's milk more nutritionally appropriate for infants. It visually presents the preparation process, stresses the importance of hygiene, and encourages the use of cup feeding. Additional points to remember are covered (Plate 16).

Plate 16: How to feed your baby fresh cow milk
Source: QAP (2007)

5. How to feed your baby Infant formula – During the survey, 11.5% cases of PMTCT-1 mothers were encountered (Table 16). These mothers were counselled on the best practices for infant feeding based on AFASS criteria. Some of these mothers decided to use replacement feeding, i.e. formula feeding. Infant formula is an artificial feed. which can act as an alternative for breast milk as the sole source nutrition for babies until they are first given solid food. The majority of infant formula milks are based on cow's milk and can be classified according to the dominant cow's milk protein of whey or casein. Although most formula milks are based on cow's milk, infant formula based on soy protein can be used from birth, although it is not recommended as a first choice unless there is a specific reason for not using cow's milk. However, most formula foods found on the market (Table 22) during the survey were not labelled in Kiswahili (Multinational Monitor, 1987) as required by law and were found to be sold without any medical prescription based on the peculiar needs of the infant. The International Code and National Regulations Code require a healthcare professional's recommendation on the use of infant formula (WHO, 1981; MOH, 1994).

Plate 17: How to feed your baby infant formula
Source: QAP (2007)

HIV-positive mothers who opted to use commercial infant formula to feed their babies could find in the brochure a complete list of steps needed to safely prepare formula and feed their babies. The brochure visually presents the preparation process, stresses the importance of hygiene and encourages the use of cup feeding. Additional points to remember are covered (Plate 17).

6. Nutrition: during pregnancy and breastfeeding – Pregnant and breastfeeding women were reminded of the importance of a test to determine HIV-status. By becoming aware of their status, HIV-positive women were able to consult their healthcare providers to determine an appropriate course of action for antiretroviral therapy and nutrition. The brochure points out that good nutrition is especially important to HIV-positive mothers and their infants and gives illustrated pointers on safely preparing food and planning balanced meals. General points covering meal frequency, water consumption, and diet supplementation are given, and women are reminded to follow their healthcare providers' instructions (Plate 18).

Plate 18: Nutrition: During pregnancy and breastfeeding
Source: QAP (2007)

7. How to feed a baby after six months

This brochure addresses questions that mothers may have regarding how to feed babies who, after six months, are beginning to eat semi-solid foods. The brochure notes that HIV-positive women should consult a healthcare provider to determine whether it would be best to give another type of milk in place of breast milk. It points out that after 6 months, babies need to be gradually eating a variety of foods and gives information on types of foods, as well as correct consistency and amounts, to give to babies aged 6, 7-8, 9-12, and 12-24 months. The brochure gives instructions for safe food preparation and storage and covers a range of other points (Plate 19).

Plate 19: How to feed a baby after six months
Source: QAP (2007)

During the study no local publications were found dealing with the subject of breastfeeding and returning to work. At the same time most working mothers did not know who they could talk to when they had questions about breastfeeding and working. Further, no books on pregnancy, child birth or infant feeding were in sight or mentioned.

4.5.7 Planned method of feeding – Preparations for infant feeding: Choice of feeding methods

The study also explored how pregnant women intended to feed their baby prior to birth. It looked at the reasons behind their feeding choice. It also examined the influence that health professionals and others may have had on mothers' choice of feeding method, through advice and information received/infant feeding skills imparted at antenatal check-ups and classes.

(i) Planned method of feeding

In the survey, less than one fifth of the pregnant women in each of the districts obtained information about infant feeding during their pregnancy (Table 9). Since pregnant women were asked prospectively of their planned intentions of choice of feeding method, it could not however, be easy to say to what extent they were able to actually carry out their stated intentions in due course. At the same time pregnant women with previous children were asked retrospectively about their choice of current or past feeding method for their youngest child. Table 10 shows predictor variables of prenatal intentions of pregnant women of methods planned for use to feed their infants during the first six months of life in each district. The number of women who planned to use exclusive breastfeeding in Ilala district was 26.7%; Temeke district, 26.7%; Kinondoni district, 13.3%, and Morogoro Urban district, 70.0%.

In a national infant feeding survey carried out in the UK to establish basic information about infant feeding practices, almost all mothers who intended to breastfeed actually did so, and mothers who intended only to breastfeed did so far longer compared with mothers who intended to mix breast and formula feeding (BMRB Social Research, 2007). However, as shown in this study, in spite of the planned intentions on exclusive

breastfeeding, some mothers who had been counselled on appropriate IYCF decided to abandon their planned intentions due to mitigating factors (improper health facility care practices) such as late breastfeeding initiation (later than 1 hour after birth) as shown in Table 14a and 14b, early introduction of supplements (Table 10), lack of rooming-in (Table 15) and use of pacifiers (Table 18). These practices were in contravention of the Code and the BFHI and were associated with the risk of early termination of breastfeeding (WHO, 1981). According to Table 20, by the age 3-4 months (12-16 weeks) 60% of the mothers in the study had already stopped breastfeeding. This situation was an indication that initiatives continued to be required in health care facilities to make breastfeeding the norm rather than a chance event.

Table 10: Method planned for use to feed baby for first six months of life by district and reasons for choice of feeding method of youngest child of pregnant mother

(a) Planned method by pregnant woman for use to feed baby for the first six months of life	
Planned method of feeding	Percent
Breast feeding only	39.8
Breast milk with water	34.1
Both breast and formula feed/other food	19.3
Both formula feed and other food/ supplements	3.4
Don't know yet	3.4
(b) Reasons for choice of method to feed youngest child of a pregnant mother	
Baby still hungry/not satisfied	8.0
Continued breast feeding up to 2 years or beyond necessary for optimal health	20.0
Due to effect of oxytocin injection/anaesthesia/ caesarian section	4.0
Delayed lactation	4.0
Convenient up to 3 months when maternity leave ends	4.0
Due to exigencies of work/own business	4.0
Breastfeeding is nature's way of providing baby with best start in life	52.0
Baby suffering from umbilical hernia/omphalocele	4.0

(ii) Reasons for choice of feeding method

All pregnant mothers who indicated the method currently in use or used to feed their youngest child were asked why they had chosen to feed their child in that way. Breastfeeding only was the method chosen by the majority of pregnant mothers (38.9) across the districts. By far, the most common reasons (Table 10b) behind the choice to breastfeed only were based on a perception that exclusive breastfeeding for the first six months of life was the best for the baby's life. This was on the understanding that breastfeeding was nature's way of providing the baby with the best start in life (52.0 %) and that continued breast feeding up to two years or beyond was necessary for optimal health of the child (20.0 %). However, 8.0% based their choice on the reason that the baby was still hungry or not satisfied.

(iii) Awareness of the health benefits of breastfeeding

Under five in ten (46.7 %) of mothers in Ilala, none in Temeke (0.00%), two in ten (20.0 %) in Kinondoni, and over five in ten (53.3 %) in Morogoro districts were aware of the health benefits of breastfeeding, while 53.3 %, 100.0 %, 80.0 % and 46.7 % mothers in Ilala, Temeke, Kinondoni and Morogoro districts respectively, were not (Table 11).

(iv) Knowledge of the health benefits of breastfeeding

Pregnant women who said they were aware of the health benefits of breastfeeding (32.2%) were asked to state what they thought were the benefits for the baby and for the mother (Table 11). Few pregnant women were able to spontaneously give at least one benefit. The most commonly mentioned health benefit for the baby was that breast-milk was more nutritious than milk formula (16.7%). Other commonly mentioned health benefits for the baby were that breastfeeding helped in the development of the immune system, making it

easier for the baby to fight infections and diseases (13.3%) and that it helped with wind, colic, and other digestive problems (2.2%).

Table 11: Awareness by mothers of the health benefits of breastfeeding and knowledge of the benefits of breastfeeding by pregnant women in all four urban districts

Awareness by mothers of the health benefits of breastfeeding by district

	Percent	
District	Yes	No
Ilala	46.7	53.3
Temeke	0.0	100.0
Kinondoni	20.0	80.0
Morogoro Urban	53.3	46.7

Knowledge of the benefits of breastfeeding by pregnant women in all four urban districts

Health benefits for the baby	Percent
Helps build immunity /fight infections and diseases	13.3
Breast milk is more nutritious	16.7
Less wind /colic /digestive problems	2.2
Better growth and development	2.2
Helps bond with mother	1.1
Easily available	1.1
Don't know	61.1
Health benefits for the mother	
Helps uterus contract/mother to lose weight	3.3
Reduced risk of breast /ovarian cancer	2.3
Don't know	94.4

(v) Duration of exclusive breastfeeding

In this study, the exclusivity of breastfeeding was measured by checking the proportion of infants who had been exclusively breastfed since birth, the one shown in Plate 21 being one of them.

This method is good at capturing irregular feeding patterns since it seeks to measure babies and infants who have only ever been given breast milk since birth. With this measure exclusive feeding status is 'lost' the first time that formula milk, other liquids, or solids are given to a baby. The weakness of this measure, however, is that in the absence of continuous monitoring, it relies upon mothers being able to accurately recall when they first introduced formula milk, other liquids, and solids. Because of this a degree of recall error is likely to be incorporated into the measure (BMRB Social Research, 2007).

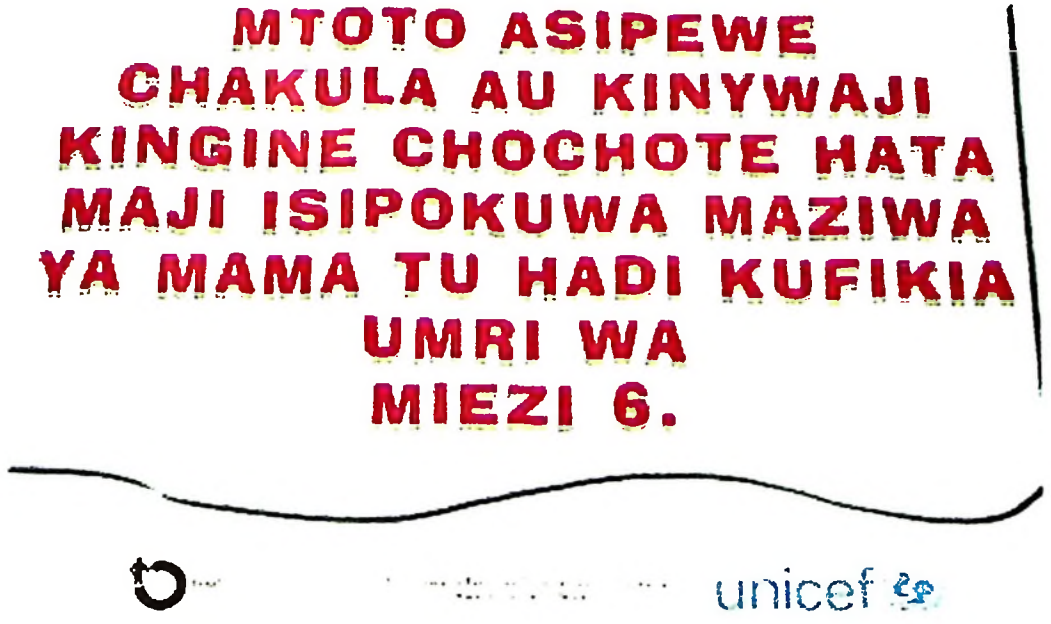

Plate 20: Awareness creation on exclusive breastfeeding by displaying messages in Kiswahili using posters posted on walls of maternity blocks, labour wards and NICUs at most of the health care facilities visited during the study

Plate 21:An infant under exclusive breastfeeding. Human milk provides digestive enzymes, immunologic factors of many types, growth factors, hormones and other bioactive factors, with new components being discovered regularly

Table 12a shows that in all districts only 5.7% infants were exclusively breastfeed for six months duration despite efforts to create awareness by use of posters (Plate 20). Current global infant feeding guidelines recommend exclusive breastfeeding for the first 6 months of life and continuation of breastfeeding with the addition of appropriate complementary foods for up to 2 years or beyond. The report of a 2004 Ministry of Health assessment on IYCF in Tanzania estimated that 97.3 % of women initiated breastfeeding but only 28.9 % breastfed exclusively for 6 months. In a cross-sectional study undertaken in a rural and urban area in Morogoro, Tanzania by Shirima *et al.* (2001) it was found that exclusive breast-feeding was rarely practised in either rural or Morogoro urban district. In the 2004–2005 TDHS, 30 % of infants under 2 months old received foods and other drinks (NBS Tanzania and ORC Macro, 2005). In the present study, however, cumulatively, exclusive breastfeeding prevalence at six months in the studied urban centres added up to 59.1%.

Table 12(a): Duration of continued exclusive breastfeeding by all districts

Duration	Percent	Cumulative Percent
Only at birth	18.2	18.2
1 week	10.2	28.4
2 weeks	9.1	37.5
3 weeks	1.1	38.6
4 weeks	4.5	43.2
6 weeks	1.1	44.3
2 months (or 8 weeks)	3.4	47.7
3 months (or 13 weeks)	4.5	52.3
4 months (or 17 weeks)	1.1	53.4
6 months (or 26 weeks)	5.7	59.1
Nil	31.8	90.9
from birth	8.0	98.9
don't know	1.1	100.0

(vi) Use of pacifiers at the HCF during the survey

Use of pacifiers by infants was highest in proportion at the health facilities surveyed in Ilala and Temeke Districts of Dar es Salaam city, followed by Morogoro Urban in Morogoro region and Kinondoni District in Dar es Salaam city (Table 12b).

Table 12(b): Proportion of babies cared for at HCF without using pacifiers by district and by health facility

District	HCF	Response	Percent
Ilala District	AA	Yes	46.7
		No	53.3
	BI	No	6.7
	AM		93.3
Temeke District	TE	Yes	33.3
		No	53.3
		Don't know	13.3
Kinondoni District	MA	Yes	46.7
		No	13.3
		Don't know	40.0
Morogoro Urban	ML	Yes	73.3
		No	26.7
	UU	Yes	86.7
		No	2

Note: AA means, Amana Hospital, in Ilala District;
BI means, Buguruni Health Centre, in Ilala District;
AM means, The Aga Khan Hospital, Dar es Salaam;
TE means, Temeke District Hospital;
MA means, Mwananyamala District Hospital;
ML means, Morogoro Regional Hospital;
UU means, Uhuru Health Centre, Morogoro.

The use of pacifiers by infants has been negatively associated with duration of both exclusive breastfeeding and overall breastfeeding (Chaves *et al.*, 2007). It is argued that pacifiers could be related to reduction in milk production, as a result of reduced frequency of feeds. According to Chaves *et al.* (2007) it is reported that Soares (2003) and others found out that the risk of full weaning before the sixth month by children who were still

being breastfed at 1 month, but who were using a pacifier was 2.8 times greater. Therefore, the pacifier use may be camouflaging breastfeeding difficulties or maternal anxiety and insecurity about the feeding process, facts which should be used as signals for alert to the need to solve such problems. WHO and UNICEF (WHO, 1989; WHO-UNICEF, 2009) recommended pacifier avoidance to promote successful breastfeeding (Barclay, 2009). On the other hand, according to the results of a systematic review to assess the association between pacifier use and breastfeeding the American Academy of Pediatrics as reported by Barclay (2009), it was found out that pacifier use may not adversely affect breast-feeding duration or exclusivity, unless introduced too early (in the neonatal period), when it was found to be detrimental to exclusive and overall breastfeeding (Howard *et al.*, 2003). The review therefore, supported recommendations to avoid exposing breastfed infants to artificial nipples in the neonatal period, and recommended that pacifier use be delayed in breast-fed infants until four weeks' postpartum, when breastfeeding is more likely to be established (Howard *et al.*, 2003; Jenik and Vain, 2009). It was observed that pacifier use has always been a controversial topic since the recommendations for or against its use have been grounded on either its benefits or drawbacks.

4.6 Hospital Practices that are Non-Conducive To the Aims and Spirit of the Code for Optimum Infant Feeding in Providing Services to Mother-Infant Pairs

4.6.1 The birth experience: breastfeeding and factors associated with the birth

This sub-section investigated mothers' experiences in hospital and how these were associated with initiation and duration of breastfeeding in the early weeks. Figures used are based on the large majority of mothers who gave birth in hospital.

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(i) Labour and delivery

The study examined the factors related to the birth, and care provided to mothers in hospital. There is a particular focus on how events during and immediately after the birth may affect feeding, and more especially breastfeeding, short of which the mother might resort to the use of infant formula or other breast-milk substitutes, or stop breastfeeding, within the first few weeks. Further, the study also covered problems with breastfeeding in hospital, and the reasons for stopping breastfeeding at this early stage. The possible influence of health care personnel, relatives and friends on mothers' feeding practices is also considered.

(ii) Home births

Each year, up to 800, 000 Tanzanian women give birth at home (Manji, 2008), and therefore miss the initial hospital coverage packages at delivery on practical infant feeding practices, such as breastfeeding initiation. In this study, less than seven percent of mothers gave birth at home while more than 90 of the women gave birth at the hospital in all districts (93.3%), except for Morogoro Urban District (83.3%) where 16.7 percent gave birth at home (Table 13). Also, in one study in the UK, it was found that only a small proportion of mothers gave birth at home (3%). However, this small subgroup of mothers was significantly more likely than other mothers to initiate breastfeeding (86% compared with 76% overall), thereby avoiding the dangers of resorting to BMS (BMRB Social Research, 2007).

(iii) Type of delivery

The majority (80%) of women gave birth vaginally (normal delivery) while 16.7% had caesarean section and 1.1 percent had episiotomy (Table 13). Manji (2007) reports that

three percent of babies born in Tanzania were delivered by caesarean section, the same proportion estimated by the 1999 TRCHS and below the expected level of between 5% and 15%. During the study, some women commented that of recent the number of the caesarean section births have tended to be on the increase because some pregnant women wished to avoid induced labour pains for convenience or even to maintain their vaginal tone and therefore requested a caesarean section. The study found out that in Ilala District (Table 13c) where the rate of caesarean sections was relatively high (26.7%), the rate of breastfeeding initiation was the lowest in the study (7.1%). Also, the study revealed that the district had the longest duration of time before the baby was put to the breast after 4 hours of birth and beyond (up to 3 days), which corresponded with the biggest proportion of such newborns (43%). Studies elsewhere have shown that such practices tended to predispose newborns to pre-lacteal feeds and/or other breast-milk substitutes besides other associated potential maternal and neonatal complications (Challiet and Dumont, 2007). The findings of a study in urban hospitals in Melbourne, Australia, confirmed that caesarean section was a significant barrier to the implementation of Baby Friendly Hospital Initiative Step 4 of helping mothers initiate breastfeeding within a half hour of birth (Rowe-Murray and Fisher, 2002). In a Meta-Analysis study to reduce Canada's caesarean section rate that had reached an all-time high of 22.5% of in-hospital deliveries in 2002, Challiet and Dumont (2007) found that clinical guidelines represented an appropriate mean for reducing caesarean section rates. The analysis confirmed that caesarean section rates can be safely reduced through interventions that help health care providers and systems evaluate and change their practice (Sakala, 2007). It is the considered opinion of obstetricians that non-operative vaginal delivery should remain the standard of care in uncomplicated pregnancy, as the safest option for the mother and the neonate (Nilstun *et al.*, 2008).

(iv) Analgesia

Due to the use of forceps and episiotomy in some of the vaginal births (Table 13), the use of analgesia in labour induced or augmented with oxytocin, pitocin, or syntocin was anecdotally reported by mothers and health workers during the study. In the UK study (BMRB Social Research, 2007), it was observed that mothers who gave birth without any form of analgesic were the most likely to initiate breastfeeding (79%), while those who gave birth under general anaesthetic were slightly less likely to initiate breastfeeding when compared with other mothers (71%). At one week and two weeks this difference became more emphasized (for example 68% of mothers with no analgesic were breastfeeding at two weeks compared with 54% of mothers giving birth under general anaesthetic). Observations during the study showed that, once in the hospital, most women who gave birth by caesarian section stayed three or more days and most of those who delivered vaginally left the hospital after two days (Table 14a and 14b). A few of the mothers who gave birth vaginally left the hospital in the first 12 to 24 hours after delivery. Staff nurses and lactation consultants have noted that many babies whose mothers receive labor analgesia, including epidurals, have difficulty performing a cluster of behaviors necessary for successfully initiating feedings at the breast (Davis, 1998). They have difficulty latching to the breast, are unable to sustain sucking once latched on, have inefficient or uncoordinated sucking leading to little milk transfer and low intake, have difficulty arousing or staying awake, and exhibit poor cueing to feed (Table 16). Thus, these babies gain slowly or not at all, and many lose excessive amounts of weight during the first week following birth. Mothers of these babies may present with sore nipples (Plate 27, 28 and 29), low milk supply (Plate 9; Table 20c), secondary engorgement, plugged milk ducts, and blocked areas of the breast (Davis, 1998). These factors tended to pave the way for the babies to be separated from their mothers and put under special care (Plate 22a and 22b) where they were given for pre-lacteal feeds and supplements as breastmilk substitutes by midwives and nurses (Table 17; Plate 24 and 25).

Table 13: Place of birth and type of delivery by all districts and type of delivery by district

(a) Place of birth by district		
District	**Pace of birth**	**Percent**
	In hospital	93.3
Ilala	At home	6.7
	In hospital	93.3
Temeke	On the way to hospital	6.7
	In hospital	93.3
Kinondoni	At home	6.7
	In hospital	83.3
Morogoro	At home	16.7

(b) Type of delivery by all districts	
Type of delivery	**Percent**
Normal	80.0
Forceps	1.1
Caesarean section	16.7
Episiotomy	1.1

(c) Type of delivery by district		
District	**Type of delivery**	**Percent**
Ilala	Normal	73.3
	Caesarean section	26.7
Temeke	Normal	73.3
	Caesarean section	26.7
Kinondoni	Normal	86.7
	Forceps	6.7
	Caesarean section	6.7
Morogoro Urban	Normal	86.7
	Caesarean section	6.7
	Episiotomy	3.3

4.6.2 Breastfeeding initiation

Table 14(a) shows the rates of putting the infant to the breast postpartum across all the four districts, combined. Initiation of breastfeeding within one hour was 52.8%, indicating a shortfall of 6.2% from the national average of 59% (NBS Tanzania and ORC Macro, 2005). However on closer examination of the details at individual HCF level, the picture is different, as can be seen in Table 14(a). The highest breastfeeding initiation rate at the HCF level was recorded at 86.6% in Ilala District, followed by 80%, in Morogoro Urban District, while the lowest was at 7.1% for a private health facility in Ilala District.

Comparatively, findings from a study on infant feeding practices in urban and rural Morogoro by Shirima *et al.* (2001), revealed that although exclusive breastfeeding was rarely practised in Morogoro urban and rural districts, initiation of breastfeeding within one hour of birth was more common in the urban area (82%) than in the rural area (52%), (P=0.001). This shows a close similarity to the findings in the present study.

4.6.3 Rooming-In: Contact between mother and baby in hospital

The practice of co-sleeping (rooming-in) tended to be associated with breastfeeding mothers. More than three-fifths (63.3%) of mothers breastfeeding at the time of the survey indicated that the infants stayed with them in their hospital beds before they were discharged (Table 15). Babies' being kept in the same bed beside their mothers at all times creates bonding and helps encourage the practice of breastfeeding.

Table 14(b) shows that only 46.3 % of children in Ilala District were breastfed within the first hour after birth, 39.9% for Temeke and 46.7% for Kinondoni District respectively. This indicates the rate of skin-to-skin contact of mothers with babies within an hour of birth. Initiation of breastfeeding was higher for mothers who had early skin-to-skin contact

than those who had no such contact after birth. The least rate of initiation indicated a 19% decrease from the 59% of the national breastfeeding initiation rate in the 2004-5 TDHS (NBS Tanzania and ORC Macro, 2005). Only Morogoro urban district had a higher rate of 65.5 %. The higher rate for Morogoro urban could be explained by the higher extent of rooming-in (76.7%) and fewer cases of caesarean sections (6.7%) compared to lower extent of rooming-in (43.3%; 66.7%) and cases of caesarean sections (26.7%; 26.7%) for Ilala and Temeke Districts, respectively (Table 15). Further, the estimates by TDHS are an aggregation of breastfeeding rates from different population groups and may mask sub-optimal patterns in some groups. Thus, the latter mentioned districts would be non-compliant with the BFHI practices, which presuppose compliance with the Code (NZBA, 2010). The interval between delivery and initiation of breastfeeding ranged from half an hour, to a few hours, days and to a whole week after delivery (Table 14(a). This is a clear pointer to a fact that the BFHI practices that were once vibrant in some of the surveyed health care facilities need revamping.

Table 14(a): Length of time before baby was first put to the breast by all districts and breastfeeding initiation within the first hour of birth by health facility

Length of time before baby was first put to the breast by all districts	
All Districts	**Percent**
Immediately	5.6
Within 1/2 hour	26.7
More than 1/2hr-1hour	20.0
More than 1hr-4hr	14.4
More than 4hr-8hr	5.6
More than 8hr-12hr	5.6
More than 12hr-24hr	7.8
More than 24hr	1.1
Three days after birth	6.7
One week after birth	1.1
Don't know	2.2
PMTCT-1 case	2.2

Breastfeeding initiation within the first hour of birth by health facility	
Health facility	**Percent**
BI	86.6
AM	7.1
TE	46.6
MA	46.6
ML	46.6
UU	80.0

Note: **AA** means, Amana Hospital, in Ilala District;
BI means, Buguruni Health Centre, in Ilala District;
AM means, The Aga Khan Hospital, Dar es Salaam;
TE means, Temeke District Hospital;
MA means, Mwananyamala District Hospital;
ML means, Morogoro Regional Hospital;
UU means, Uhuru Health Centre, Morogoro.

Table 14(b): Length of time before the newborn was put to the breast after birth by District

District	Duration	Percent
Ilala	Immediately	16.7
	Within ½ hour	13.3
	More than ½ hour up to 1 hour	16.7
	More than 1 hour up to 4 hours	6.7
	More than 4 hours up to 8 hours	6.7
	More than 8 hours up to 12 hours	10.0
	More than 12 hours up to 24 hours	3.3
	More than 24 hours but less than three days	10.0
	Three days	13.3
Temeke	Within ½ hour	26.6
	More than ½ hour up to 1 hour	13.3
	More than 1 hour up to 4 hours	26.7
	More than 4 hours up to 8 hours	6.7
	More than 12 hours up to 24 hours	20.0
	Don't know	6.7
Kinondoni	Within ½ hour	20.0
	More than ½ hour up to 1 hour	26.7
	More than 4 hours up to 8 hours	13.3
	More than 8 hours up to 12 hours	6.7
	More than 24 hours but less than three days	6.7
	Three days	6.7
	Don't know	6.7
	Replacement Feeding (PMTCT-1 mother)	13.3
Morogoro Urban	Immediately	3.3
	Within ½ hour	40.0
	More than ½ hour up to 1 hour	20.0
	More than 1 hour up to 4 hours	23.3
	More than 8 hours up to 12 hours	3.3
	More than 12 hours up to 24 hours	6.7

Table 15: Contact between breastfeeding mothers and babies while in hospital (rooming in) and proportion of babies put into special care, or put under a lamp for jaundice

Contact between breastfeeding mothers and babies	Percent
Mother and baby together	63.3
Baby in incubator or special care most of the time	32.2
Proportion of babies put into special care, or put under a lamp	**Percent**
Baby put into special care or under a lamp	40.0
Baby neither put into special care, nor under a lamp	46.7

4.6.4 Babies in special care

About 40.0% of mothers and infants were separated and admitted to special care in a nursery or neonatal/premature unit (Plate 22a and 22b). Infants starting life in special care, except for those given expressed mother's milk and/or under kangaroo mother care (Plate 23a-f) tended to have less skin-to-skin contact with their mothers and were also less likely to be breastfed during the separation, due to various reasons (Table 16). It is known that enzymes in breast-milk help immature infants absorb and utilize nutrients more efficiently (UNICEF, 2006). About one third (34.6%) of such babies were put under special care due to mothers producing insufficient milk and delayed lactation. Other reasons for separation included effects on the mother, of oxytocin/anaesthesia or caesarean section (30.8%), PMTCT-1 cases (11.5%), exhaustion after labour (7.7%), eclampsia (3.8%), primary pulmonary hypertension or PPH (3.8%), temporary lack of bed (3.8), and ill-health of the mother (3.8). Although this was the time for the mothers to receive more support for breastfeeding their babies, under these conditions most of the babies were fed with BMS (Table 17; Plate 24) due to lack of breastfeeding support by the health care workers Table 18).

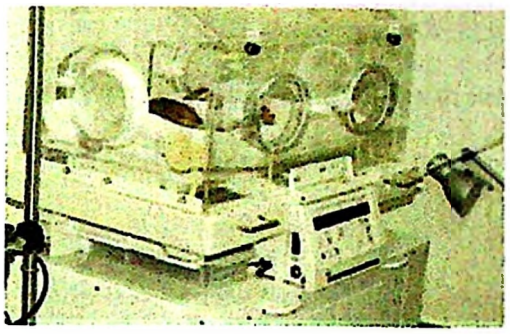

Plate 22(a): Baby under special care in a nursery

Plate 22(b): Baby under special care in a nursery

(i) Kangaroo mother care (KMC) – Care of small babies (Premature babies)

Plate 23: (a) Mother expressing own breast-milk for feeding her preterm baby well before embrace between her breasts

(b): Mother embracing uncovered baby on her chest.

(c): Mother readying embraced baby for covering and securing with *khanga*.

(d): Mother tying baby to her chest between her breasts (Kangaroo-Mother-Care)

(e): Baby covered and secured to mother's body with skin-to-skin contact

(f): Covered baby (head included) being cup-fed on expressed breast milk

In this study, 40% of infants were separated from their mothers and put under special care due to various reasons. Few health care facilities had requisite infrastructure or neonatal units. Only one health facility provided for Kangaroo Mother Care (KMC), for preterm newborns as shown in Plate 23a – 23f. It is important that preterm newborns be given mothers milk (and not BMS), expressed (Plate 23f) or by breastfeeding because breast-milk is especially beneficial for the preterm infant. Preterm human milk contains higher concentrations of immunoglobulins, other anti-infective factors such as lysozyme, lactoferrin and interferon, and more anti-inflammatory and immunomodulating components, thus providing some protection from infection to these vulnerable infants (UNICEF, 2006).

(ii) Babies exposed to early skin-to-skin contact and breastfeeding initiation

There has been increasing interest in the effects of skin-to-skin contact between mothers and babies, since this may encourage babies to root for the breast, thus helping to establish a successful first breastfeed. Lack of skin-to-skin contact and early initiation of breastfeeding would tend to create less bonding of the baby to the mother, delay lactation even further, and thereby enhance insufficient production of breast milk by the mother for the infant (Plate 23a – 20f). The separation of newborns from their mothers for the reasons given in Table 16 does not augur well for skin-to-skin contact, and therefore, bonding and successful breastfeeding initiation. In the UK study (BMRB Social Research, 2007), breastfeeding initiation was indeed much higher for babies exposed to early skin-to-skin contact (79% immediately and 87% within an hour compared with 57% of babies with no such contact). Immediate contact was associated with slightly lower initiation than contact within an hour.

Table 16: Reasons based on mother for putting babies in special care

Response	Percent
Insufficient milk	3.8
Delayed lactation	30.8
Effects of oxytocin/anaesthesia/ caesarian section	30.8
PMTCT-1 case	11.5
Primary pulmonary hypertension (PPH)	3.8
Delayed lactation coupled with temporary lack of bed	3.8
Exhaustion after labour	7.7
Eclampsia	3.8
Ill-health	3.8

4.6.5 Formula milk and other drinks in hospital

Feeding practices in hospital are expected to help inform mothers' future feeding choices. In this survey, the study looked widely to find out whether breastfed babies had been given infant formula milk, water, and dextrose or glucose water while they were in hospital.

Plate 24: Artificial milk (BMS) feed preparation in the hospital fed to infants by the midwife/nurse using syringe

According to Table 17, midwives/nurses gave prelacteal meals/breast-milk substitutes (Infant Formula milk (Plate 24 and 25) and dextrose or glucose water to 56.7 % (instead of breast-milk) to infants born during their stay in a hospital in Ilala District. The infants were fed by using feeding bottles and syringes (Plate 24 and 25). Only 3.3 % of such infants were given expressed breast milk (Plate 14).

Plate 25: BMS (powdered Infant Formula in tin and prepared liquid infant formula milk left-over in a plastic baby feeding bottle with an artificial teat). This is evidence of Code violation found in postnatal ward of a district hospital. All items, including the nipple shield, were being used in contravention of Article 6.3 of the Code that prohibits facilities of health care systems being used for the display of products within the scope of the Code

It appears that what midwives or nurses gave babies before they were put to the breast was an implementation of routine orders from pediatricians and/or obstetricians in each particular health facility. Infant formula milk and dextrose or glucose water were common breast milk substitutes provided to infants while in hospital in the four districts (routine prelacteal feeds policy). This practice was particularly associated with low birth weight babies (babies born weighing less than 2.5 kg were given additional feeds/liquids) and those starting life in special care. In a quarter (25%) of all cases where this had occurred it was because this had been advised, although 7.1% of infants were given additional feeds/liquids because their mothers had wanted their baby to have something else (Table 18). The remaining 67.9% could have been mothers who were giving formula-feeds in response to breastfeeding difficulties, but who ideally would have preferred not to. Babies in special care were more likely than others to have received additional feeds on advice, based on BMS.

In the present study it was observed that this harmful hospital routine of giving newborns glucose has made a come back, because, as noted by Shirima *at al.* (2001) on comparison of feeding practices among infants of less than 7 months of age in a rural and urban area in Morogoro, Tanzania, the practice seemed to have stopped. However, among the two professional cadres of nurses and midwives (Table 1), in Temeke none of them had heard or been aware of the Code or National Regulations. The situation was almost the same for Kinondoni and Morogoro Municipalities. This situation, which is a missed opportunity at the HCF level, suggests that ongoing breastfeeding advocacy within existing programs for newborn health in Tanzania needs to be done with physicians and midwives, etc., to include breastfeeding information as a minimum standard in prenatal care. This is in line with the strategy outlined by MOHSW (2008) that every district hospital should practice

all the ten strategies of the BFHI, pointing out poor breastfeeding as a gap for newborn health, resulting from poor counselling skills among health care providers (Manji, 2009).

Table 17: Proportion of babies given formula, water or glucose by midwives while in hospital by district

District	What the midwife gave baby	Percent
Ilala	Expressed breast milk	3.3
	Infant Formula milk	36.7
	Dextrose or glucose water	20.0
Temeke	Dextrose or glucose water	26.7
	Don't know	53.3
Kinondoni	Infant Formula milk	6.7
	Dextrose or glucose water	20.0
	Don't know	26.7
Morogoro Urban	Infant Formula milk	3.3
	Dextrose or glucose water	26.7
	Water	3.3
	Don't know	3.3

Table 18: Sources of advice to mothers about the health benefits of breastfeeding and proportion of mothers given information by staff about the risks associated with feeding milk or other liquids with bottles and teats

(a) Sources of advice to mother about the health benefits of breastfeeding

Response	Percent	Cumulative Percent
Mother	3.3	8.1
Mother in law	2.2	13.5
Other family members	2.2	18.9
Doctor	6.7	35.1
Nurse /midwife	23.3	91.9
Magazine /book / leaflet	1.1	94.6
TV/radio	1.1	97.3
Something taught at a seminar	1.1	100.0

(b) Proportion of mothers given information by staff about the risks associated with feeding milk or other liquids with bottles and teats by district

District	Percent		
	Yes	No	Don't know
Ilala	43.3	56.7	0.0
Temeke	26.7	60.0	13.3
Kinondoni	60.0	13.3	26.7
Morogoro Urban	30.0	70.0	0.0

4.7 Health Problems with the Baby

4.7.1 Health problems with babies at the time of the survey

Mothers were asked during the survey about ill-health conditions that their babies had ever experienced (Plate 26a). Table 19 shows prevalence of ill-health conditions of infants during the survey. Most of the babies were brought to the hospital due to common health

problems suffered by infants by the age 1 day – 12 months were general sickness/fever/high temperature/vomiting, diarrhoea, malaria, chest infection, pneumonia and skin infection, each experienced by between approximately 10% and 30% of infants.

At the time of the survey common health problems suffered by infants by the age 1 day – 12 months were general sickness/fever/high temperature/vomiting, diarrhoea, malaria, chest infection, pneumonia and skin infection, each experienced by between approximately 10% and 30% of infants. Mothers are advised to breastfeed for as long as possible in the first six months of a baby's life, as research has shown that breast milk helps build immunity to infection and can reduce the risk of many health conditions including gastro-enteritis (vomiting and diarrhoea), ear infections, chest infections, asthma, eczema and urinary infections (UNICEF, 2006).

Table 19: Health problems suffered by babies at the time of the survey

Health problem	Percent
General sickness/fever/high temperature/ vomiting	28.9
Constipation	2.6
Diarrhoea	23.7
Malaria	13.2
Chest infection	7.9
Pneumonia	7.9
Skin infection	7.9
Recto-vaginal fistula	2.6
Dysentery	2.6
Umbilicus sepsis	2.6

Plate 26(a): A sick baby with its mother before a Pediatrician; the father of the child also participated at the postnatal clinic. Infectious and chronic illness is reduced by exclusive breastfeeding, beyond the impact of breastfeeding alone

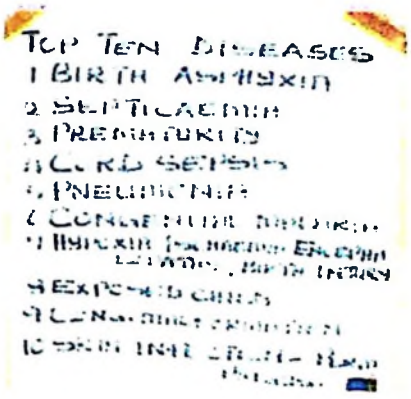

Plate 26(b): The Top Ten Killer Diseases in the Pediatric Ward, at one of the Health Care Facilities visited during the study in 2008. Studies in developing and industrialized countries confirm the life saving benefits of breastfeeding, particularly in preventing diarrhoea, pneumonia and sudden infant death syndrome (SIDS) deaths

4.7.2 Reasons for mothers stopping breastfeeding

The reasons given for stopping breastfeeding varied from mother to mother depending on when after birth (Table 20). The most common reasons for stopping breastfeeding were: baby not suckling/baby rejecting the breast (33.3%) and mother having insufficient milk (33.3%). Others were, mother having painful breasts or nipples 16.7% (Plates 27, 28 and 25) and mother being sick (16.7%). These mothers lacked professional support, e.g. on re-lactation to establish optimum lactation. There is need for a national initiative to institutionalize breastfeeding counselling as a core service.

Table 20: Ages of infants, age when mother stopped breastfeeding and reasons given for stopping breastfeeding within the first two weeks by all Districts

(a) Ages of infants	
Age	**Percent**
1 day	5.6
2 days	4.4
3 days	5.6
4 days	3.3
5 days	7.8
1 week	2.2
2 weeks	5.6
3 weeks	1.1
4 weeks	10.0
5 weeks	3.3
6 weeks	6.7
7 weeks	2.2
2-3 months	5.6
4-6 months	11.1
7-9 months	14.4
10-12 months	11.1
(b) Age of infant when mother stopped breastfeeding	
Age-range (months)	**Percent**
0-2	40.0
3-4	20.0
5-6	0.0
7-8	20.0
9-10	0.0
11-12	20.0
(c) Reasons given by mothers	**Percent**
Baby would not suckle/ rejected breast	33.3
Insufficient milk	33.3
Painful breasts, sore nipples or inverted nipples	16.7
Mother was sick	16.7

Plate 27: Breast of a breastfeeding mother showing a sore nipple.

Plate 28: Partly inverted and sore nipple of a breastfeeding mother

Plate 29: Inverted nipple of the breast of a pregnant woman

4.8 Complementary Feeding

Table 20(b) shows that when all four districts are considered together, within 8 weeks *postpartum*, breastfeeding termination prevalence among mothers was 40%, and within 12-16 weeks it had reached 60%. This could possibly be linked to the lack of optimum feeding practices mentioned under clause 4.5.7 in the health facilities, meaning, indicators of the absence of specific BFHI practices (late breastfeeding initiation, use of prelacteal meals, no rooming-in, introduction of prelacteal meals and supplements, and use of pacifiers). In one longitudinal study in which a mail survey (1993-1994) was administered prenatally through 12 months postpartum, DiGirolamo *et al.* (2001) found that only 7 percent of mothers had experienced the BFHI practices, including breastfeeding on demand. The strongest risk factors for early breastfeeding termination were late

breastfeeding initiation and supplementing the infant. Compared with mothers experiencing all five Baby-Friendly practices, mothers experiencing none were approximately eight times more likely to stop breastfeeding early, leading to early complementation (DiGirolamo *et al.*, 2001).

The mothers started introducing the infants to a locally made infant complementary cereal meal (porridge) made from maize before they stopped breastfeeding at 8 weeks. The maize meal porridge used was watery and rarely enriched with milk or fat. The main reason stated by the mothers for starting complementation too early was the same for all health care facilities – mothers thought their babies were not getting enough milk (50%) or not gaining weight (10.7%), at half of the health facilities (Table 20c), although moderate and mild malnutrition are not readily apparent. Thus, regular monitoring of infant's weights on a growth chart (Plate 2) is important, so mothers know whether their infants are growing properly and can see the benefits of changes in infant feeding practices.

4.9 Labelling And Promotion of Breast Milk Substitutes at Distribution Points

4.9.1 Violations of the International Code at retail outlets in Dar es Salaam and Morogoro regions

Violations of the Code were not limited to the healthcare system. The investigator visited 10 selling points (four supermarkets, four mini-supermarkets and two food stores) in the three municipalities of Dar es Salaam City and the Morogoro Municipality (Table 21) as part of the supply end to the health care system. It is in large cities that the bulk of breast milk substitutes are sold, compared to smaller cities where only a limited number of people could afford to buy and use infant formula milk for the first few months of life of the child, and even less to buy other infant food products among the categories identified in the survey (Table 21; Appendix 2).

Table 21: Distribution/Points of sale and sample product categories by district

District	No. of Sales points	BMS/Designated Product Sample Category					
		Infant Formula	Cereal-Based	Baby Drinks	Desserts	Rusks	Feeding bottle/ teats
Ilala	1	2	3	2	1	1	-
Temeke	1	2	1	2	1	1	-
Kinondoni	5	2	3	4	1	1	4
Morogoro Urban	3	1	2	-	-	-	1
Total	**10**	**7**	**9**	**8**	**3**	**3**	**5**

(i) Violations of the International Code in Dar es Salaam and Morogoro Regions

Labels of five infant food categories and designated products were checked for compliance as per standards prescribed in the Code and in the National Regulations. Labels were required to provide the necessary information about the appropriate use of the product so as not to discourage breast feeding, as required in Article 9.1 (WHO, 1981). Neither the container nor the label must include pictures (Plate 30a) or text that may idealize the use of infant formula, according to Article 9.2 (WHO, 1981). Labels must provide clear, easily readable, and understandable information in an appropriate language (Plate 30a) and include a statement on the superiority of breast feeding, a statement that the product should be used only on the advice of a health provider, instructions for appropriate preparation, and a warning of the health hazards of inappropriate preparation. Information on composition of the product and information on the storage conditions are also required as stipulated in Articles 9.2 and 9.4 (WHO, 1981).

The study revealed that 35 breast milk substitutes and designated products within the scope of the Code and NRs violated one or more of these provisions of the Code and NRs (Appendix 2). These products were infant formula, Milk-cereal complementary foods, plain-cereal complementary foods, baby drinks, fruit juices, fruit and vegetable juice blends, deserts, rusks, bottles, teats and pacifiers. Most breast milk substitutes that did not comply with the labelling standards of the Code were produced by international manufacturers, with Nestlé, Purity and Milupa having an overwhelming presence. Over half (20) of the breast milk substitutes that violated labelling standards were manufactured by Nestlé, Milupa and Purity together; five were manufactured by Heinz Baby Corporation/Camera and by six other national or international manufacturers. Nestle is the largest multinational company in the food sector, with geographic presence in 140 countries and 449 factories globally. Tanzania does not have a baby food manufacturing factory. Most of the Nestle products found on the Tanzania market were from Kenya, South Africa and Zimbabwe. In 2009, Nestle reported to have 220 emerging markets; although the Tanzania market for baby foods is relatively small, if imports through official and unofficial routes are not effectively put under control, Tanzania could soon join the Nestle emerging markets. This is due to the feeling among many mothers especially in the cities and towns that it is the modern thing to bottle-feed their babies rather than suckle them on the breast. At the same time almost all baby food companies violate the rules by designing labels that have attractive images or text messages that could influence mothers to decide to quit breastfeeding and switch to bottle-feeding.

Appendix 2 gives details of labelling violations by manufacturers and type of breast milk substitute involved:

- Over half (57.1%) of the products that violated the Code were found to recommend inappropriate ages of introduction of the foods to babies;

- 17% infant formula foods had no statement on superiority of breastfeeding;
- 45.7% did not say that the product should be used only on advice of health provider;
- 8.6% baby foods had no instructions for appropriate preparation and use;
- 54.3% had no warning against health hazards of inappropriate use;
- 91.4% carried pictures, drawings, or text idealizing use of the product.
- Instead of providing nutrition information, some carried statements pertaining to nutrient content claims, nutrition claims, health claims and developmental claims such as
    - "follow-up formula with iron and prebiotics";
    - "iron plus calcium – added vitamins – prebiotics";
    - "a complete meal – enhances healthy development";
    - NESTLE NESTUM when mixed with your breast-milk or baby's milk feed provides a nutritionally complete meal during the critical weaning period", and
    - "talk to us".

Nutrition and health claims are not the same as nutrition information (which is essential) and, in creating a perceived advantage, the claims confuse parents or care takers. Breast milk substitutes have no health advantage over breastfeeding. Health and nutrition claims violate the International Code and the subsequent relevant WHA Resolutions and Tanzania National Regulations. Further,

- 17.1% of the samples with violations of the Code had no information on storage;
- 31.4% suggested or recommended use of feeding bottle;
- 2.9% had no information on composition or analysis; and

- 85.7% used inappropriate language on the label, such as Arabic, Ndebele, English and French, without Kiswahili.

The position of retail outlets permitting advertising, activities of sales agents dealing directly with mothers, pregnant women, relatives and friends, seems to be mostly caused by unawareness of IC provisions, commercial interest and lack of strict enforcement of the law. The WHA has considered through a resolution that follow-up formula was unnecessary (WHO, 1986). Producing follow-up or follow-on infant formula products "2" "3" "4" with similar brand names seems to be more of a marketing strategy – to create visibility and milk-drinking culture – than a matter of necessity (Plate 30b and 30c). Brand names, tin designs and labels of follow-on milks echo those of infant formula. According to the Tanzania 2002 National Census, the female literacy rate was 62.2% for women at the age of 15 and above (CIA, 2010). For the illiterate, the numbers for the follow-up infant formula products "2" "3" "4" with similar brand names might not make much sense to them. Therefore, unless colour coding with proper prescription by a health professional is availed the over one third (37.8%) illiterate, possible buyers might be mistaken in choosing between any two brands of products that were not distinct enough from each other (Plates 32).

Appendix 2 shows that there were several types of milk other than breast milk that mothers can use during their baby's first year. During the first six months of life infant formula, may be used on advice of a health professional. As babies grow older other types of milk, such as cow's milk may be introduced.

Plate 30 (a): Lactogen-1 Starter infant formula with picture of a nursing bird (an enlarged and idealized image of Nestlé logo). The container is labelled in English and another language that is not Kiswahili. Nestlé claims that Tanzania is the only country in the world that has asked them to remove the picture and have complied, adding that other countries have not taken the view that this logo can induce mothers to stop breastfeeding and they allow it (Nestlé, 2009). It is likely that Nestlé products from such countries, labelled in their language cross borders by way of illegal trade into Tanzania where Kiswahili is the official language.

Plate 30 (b): Lactogen 2 – Follow-up formula with nutrient content claim on 'Iron' and health claim on 'Prebiotics'.

Plate 30: (c) S-26 Promil – Follow-on formula with nutrient content claim on 'Iron'

While infant formula milk (Plate 30a) is usually whey-based in order to be as close to breast milk as possible, follow-up/follow-on milk (Plate 30b; Plate 30c) is casein-based and fortified with iron. Follow-on milk takes longer to digest and is considered by WHO to be unnecessary for infants. However, it is sometimes claimed that it is especially suitable for hungrier babies (Milupa, 2008), although there is no evidence for this claim. It is not recommended that follow-on milk is given to infants before the age of six months.

Some labels of the products in Appendix 2 carry the claim that a given infant formula contains iron (Plate 30a-c; Plate 15). By composition and as per specification, an infant formula should have sufficient amounts of iron to meet by itself the nutritional requirements of an infant in the first months of life. Therefore, such claims in labelling should not be allowed because they could mislead undernourished mothers by making them feel that their breast milk might be deficient of satisfactory amounts of iron for the baby, thereby creating an argument for bottle-feeding for a healthier baby and protection for the poorly nourished mother, since breastfeeding would seem to make the mother weaker. According to WHO (2002), iron requirement is thought to be higher in later than early infancy, with iron requirements estimated to be 0.5 mg/day for infants from 0 to six months of age and 0.9 mg/day for infants 6 to 12 months of age. At a fractional iron absorption rate of 0.20, it is clear that breastfed infants subsidize their requirements from iron reserves in the body. The iron endowment at birth adequately provides for the iron needs of the breastfed infant in the first half of infancy. The iron available for growth and development should be adequate until iron stores are exhausted (WHO, 2002).

Some companies were found to advertise the use of feeding bottles, such as Aspen's S-26 Promil, Wyeth – Nursoy, Milupa – Milutea, Frester Holdings – Gripper bottle, Heinz Baby Corporation:Camera – teat, Heinz Baby Corporation: Camera – Silicone and Frester

Holdings – Pacifier, which have a very clear picture of such bottles in their labels. The labels of some products contain photos or text that their product was ideal to infant nutrition (follow-up formula with iron and pre-biotics), thus putting breastfeeding on the shade.

Some other products contained idyllic pictures/photos, such as Nestlé's Lactogen-1 with a picture of a mother-bird feeding her nestled young ones (Plate30a).

Plate 31: Idealized Nestlé logo as depicted on some Lactogen-1 brands found during the study. Nestlé's "normal" logo is far smaller, but the company contends that it is legally acceptable to modify it, simply for being "the" Nestlé logo, and therefore Nestlé has not breached Articles 9.1 and 9.2 of the Code.

Plate 32: Nestlé's telephone and postal address contacts provided on the label s for Lactogen-1 and Lactogen-2 i.e. Starter Infant Formula and follow-up formula, manufactured by Nestlé (South Africa) (Pty) Ltd., both with manufacture and expiry dates 2007-2009, respectively. This is evidence in violation of Article 5.5 of the Code.

The telephone number and postal address of the company's consumer services were given on the labels by Nestlé Consumer Services for direct contact with mothers (Plate 32). This is a violation of Article 5.5 of the Code, which states that marketing personnel, in their business capacity, should not seek direct or indirect contact of any kind with pregnant women or with mothers of infants and young children (WHO, 1981). This kind of evidence of Nestlé violations seems to have been refuted in a Nestle Investigation of Reported Non-Compliance with the International Code (Nestlé, 2009), to which Nestle responds that this does not prevent appropriately qualified personnel from responding to complaints or unsolicited requests for information on correct use of formula. Requests for information on health matters, or general information on formula, must be referred to a health worker (Nestlé, 2009).

Violation of the required age of starting the product, which has the possible effect of negatively influencing breastfeeding practices, was observed on Plate 33a-c. A similar violation of WHA resolution 54.2 (WHO and UNICEF, 2003) on the new recommended age of introduction of complementary foods from sixth month was found on the label of an infant food in Dar es Salaam in 2002 and reported by IBFAN Africa in 2004 (Plate 1).

Plate 33(a): Evidence of Code violation of Article 2 on the appropriate age of introduction of complementary foods by recommending from 4 months to 6 months.

Plate 33 (b): Evidence of Code violation of Article 2 on the appropriate age of introduction of complementary foods by recommending as "Suitable from birth" with no time limit.

Plate 33 (c): Evidence of violation of Article 4.2 of the Code by using baby picture and also by recommending as suitable complementary food for all three stages of infant feeding

Plate 34: A container for silicone teats with picture no.1 of baby suckling from a mother's breast and another picture no. 2 of a baby "sucking" from a milk bottle with a teat. Picture no.1 bears the words "Like the nipple of a breastfeeding mother's" in a layout that places the words close to those under picture no.2: "The *CAMERA* nipple is nearer mother's" for comparison, which has a negative effect on breastfeeding and in breach of Article 9.1 of the Code.

On Plate 34, below picture no.1 there are words which state "Like the nipple of a breast-feeding mother's", and below picture no.2 there are words which state, "The CAMERA nipple is nearer to mother's." These statements were in violation of Article 7.2 of the Code because they implied that bottle-feeding was equivalent or superior to breast milk, or idealized BMS. No statement was provided on the superiority of breastfeeding and the health hazards of breast-milk substitutes as require by Code.

4.10 Responsibilities of Government, Health Care Professionals and Manufacturers

Most infant food manufacturers are violating the Code in many countries in the world every year (IBFAN, 2007). The evidence of violations in the case of Tanzania can be seen in the results of this study presented in Appendix 2. The development of national legislation to regulate the marketing of BMS is a key step in protecting, promoting and supporting breastfeeding. However, the evidence in the results of the study show that

having a good national legislation in place is not good enough. Governments have an obligation to ensure that legislation is accompanied by effective training, information, implementation and monitoring systems so that scientific knowledge rather than marketing practices or cultural norms guides health professionals' health practices. This is even more urgent in the wake of the HIV/AIDS pandemic.

4.11 Importance of Implementation and Monitoring of the Code

The frequency of the violations occurring in the four municipal districts in the study showed that 16 years after Tanzania adopted the Code; its requirements are still unmet. There was little to suggest that the situation would be different in some other major cities and urban centres in Tanzania if the Code was not implemented in Dar es Salaam which is continuously under the watchful eyes of law enforcers. However, the results of this study provide a baseline for a countrywide surveillance on a sustained basis rather than intermittently.

CHAPTER FIVE

5.0 CONCLUSION AND RECOMMENDATIONS

Effective implementation of the Code and NRs for Tanzania is paramount because protection, promotion and support of breastfeeding are critical public health needs, since undernutrition remains a significant problem in Tanzania and a contributing factor to 50% childhood mortality. Malnutrition in children is frequently related to inappropriate IYCF practices. Both the Code and the NRs were being violated in the sample hospitals surveyed. The study revealed that awareness of the legislation was very low among the health workers in the selected urban government, private and municipal HCFs in Tanzania. The results also showed that health workers across the urban districts who were aware of the NRs were only 12.2%. Implementation rules and regulations are required in HCFs in Tanzania, because according to the study results, they were found to be the main source of free BMS or advice/recommendation on the commercial brands suitable for use by first-time mothers. Therefore interventions, such as effective implementation of the Code must focus on these discrepancies.

Globally, only 34.6% of infants less than six months of age are exclusively breastfed. Nationally, the exclusive breastfeeding rate has been reported to be 41%. Results of this study showed that in all four urban districts covered only 5.7% infants were exclusively breastfeed for six-month duration. The impact of this and several inappropriate infant feeding HCF practices was reflected both in late initiation of breastfeeding and early termination. Initiation of breastfeeding within one hour was 52.8%, indicating a shortfall of 6.2% from the national average of 59%, and early termination of breastfeeding by the age of 8 and 12-16 weeks *postpartum* was 40% and 60% of the mothers, respectively. The

opinion of health workers was the most important factor influencing mother's decision to choose a particular formula or supplement brand for artificial feeding, instead of being given professional support including counselling and encouragement on management of lactation crises. This was a missed window of opportunity for counselling pregnant women and mothers by the health workers on optimal IYCF because under-nutrition's most damaging effect occurs during pregnancy and in the first two years of life, and the effects of this early damage on health, brain development, intelligence, educability, and productivity are largely irreversible. Therefore, the findings of this study show the need to set realistic goals for increasing both breasting initiation and duration and decreasing disparities in these rates across the populations in the districts.

Further, the investigator found 35 breast milk substitutes and designated products within the scope of the Code and NRs that violated one or more of the provisions of the Code and NRs. These products were infant formula, Milk-cereal complementary foods, plain-cereal complementary foods, baby drinks, fruit juice, fruit and vegetable juice blends, deserts, rusks, feeding bottles, teats and pacifiers. The results indicate that the promotion of the BMS and some commercial foods for infants and young children in the health care facilities through inappropriate labelling information and presentation, tended to create the image of artificial food being healthier, thereby causing a harmful change in attitude towards breastfeeding among some mothers. Such mothers easily opted for artificial foods whenever they felt that they were not producing sufficient milk, or their babies were always hungry, but without medical indications. Optimal breastfeeding was undermined further with the negative impact caused by the mislabelling and promotion of BMS that involved medical personnel, which undermined progress in optimal IYCF as well.

The situation of non-compliance with the Code and NRs in Tanzania as revealed in the study seems to be based on the following factors:

- The lack of an updated national legislation for more than 15 years (since 1994) to keep it abreast with changes and clarifications contained in several relevant WHA resolutions to strengthen the Code. Since then, at least eight more relevant WHA resolutions have been passed by the World Health Assembly. As a result of lack of a revised national legislation, the 1994 National Regulations are still in force, with an exclusive breastfeeding period of four-to-six months. Thus Tanzania has not been able to make it clear whether or not the country has adopted the new, population based public health WHA recommendation (WHA 54.2) for six-month exclusive breastfeeding of newborns as a national policy, since 2001. The exclusive breastfeeding policy position has an important bearing on HIV and infant feeding guidance for HIV-seropositive mothers;
- A low level of awareness among health workers: many HCF staff have no information on or are utterly unfamiliar with the Code or NRs;
- The position of HCF management is also related to a lack of information: there is no unity in opposing the promotion of products within the scope of Code, since, primarily, there is no awareness of the harm the activities of these manufacturers cause to the health of breastfeeding mothers, infants and young children. Infant formula milk and dextrose or glucose water were common breast milk substitutes provided to infants while in hospital in the four districts (routine prelacteal feeds policy);
- The companies involved in the production and/or distribution/sales of breast-milk substitutes, bottles and teats in Tanzania take advantage of the ignorance of health care providers, the general public, decision makers, and lack of awareness of the

harmful influence of their incorrect marketing activity on breastfeeding. Further, the companies take advantage of the absence of a monitoring coordination mechanism among various government institutions and social control. As a result the companies are aggressively and silently implementing marketing activities involving unofficial cross-border trade routes, medical providers, distribution/retail sales outlets and the media.

- Food in Tanzania, as a basic human need, is produced and/or traded and consumed under the direction of six sectoral ministries, each with partial responsibility, but the main responsibility of none:

  (i) agriculture, food and cooperatives,

  (ii) livestock development and fisheries,

  (iii) natural resources and tourism,

  (iv) water and irrigation,

  (v) industries, trade and marketing,

  (vi)health and social welfare;

- The position of distributors/retail outlets permitting advertising and activities of sales agents dealing directly with mothers and pregnant women etc. without medical prescriptions, which is mostly caused by unawareness of Code provisions and commercial interest

In this regard, TFDA, alone cannot effectively carry out food control measures to enforce and monitor the Code and the NRs. TFDA needs a supporting mechanism for coordination with government ministries and agencies directly and indirectly concerned with food and nutrition matters to prevent inappropriate promotion and marketing of commercial infant formula products. The many sectors and agencies involved in food and nutrition security

for infants and young children make management difficult, because nutrition does not naturally fall under a single line ministry. The study therefore provides a reminder that the Government has an obligation to ensure strict implementation of the law, accompanied by effective awareness raising, training, information, and implementation and monitoring systems so that scientific knowledge rather than marketing practices or cultural norms guides health professionals' health practices. This reminder is even more urgent, bearing in mind the challenges posed by the HIV/AIDS pandemic and difficulties in formulating appropriate policies for IYCF.

5.1 Recommendations

(1) Many of the products found with Code violations originated from South Africa, Zimbabwe and Kenya. Tanzania, with eight neighbouring countries (Kenya and Uganda to the North; Rwanda and Burundi to the North-West; Democratic Republic of Congo to the West; Zambia to the South-East; Malawi and Mozambique to the South) and a long coastline along the Indian Ocean on its eastern border, may find it a big challenge for food control authorities in preventing cross-border illegal trade along 5,285 km of boundaries. Since violations transcend borders, the control of infant foods trade in Tanzania should not be left to TFDA. The violations have created a challenge that requires a regional approach for harmonization and coordination of effort among the Member States of the East African Community (EAC) and Southern Africa Development Community (SADC), in order to enhance effective implementation and monitoring of the Code and the NRs, with subsequent improvement in IYCF practices.

(2) In order to make exclusive breastfeeding for six months followed with adequate complementation up to two years and beyond, accepted as norm or the gold standard of optimal infant and young child feeding, TFDA should carry out advocacy

mobilization. This will include government ministers, parliamentarians, the judiciary, government agencies, trade unions (employers and workers unions), chambers of commerce, as well as the community, including media and social marketing, for sensitization on the important role of breast-milk and breastfeeding to national development.

(3) Further, the study revealed that there were a number of hospital practices that were non-conducive to the aims and spirit of the Code for optimum infant feeding in providing services to pregnant women and mother-infant pairs. Another way to improve breastfeeding acceptance and practice is through revitalizing and sustaining the Baby-Friendly Hospital Initiative, which applies a 10-step process to improve health care workers' practices in the labour and delivery wards, including Neonatal Infant Care Units. In addition, scaling up efforts is needed for the tenth step, focusing on follow-up at the community level, because the study showed that when all four districts are considered together, within 8 weeks *postpartum*, breastfeeding termination prevalence among mothers was 40%, and within 12-16 weeks it had reached 60%. Breastfeeding support through peer-to-peer counselling needs to be extended to communities, beyond the HCF setting. Therefore, there is need for a national initiative to institutionalize counselling as a core service, and train peer counsellors who will work primarily from home to provide telephone support to pregnant and breastfeeding mothers. In many programs in a number of countries, peer counsellors also provide clinic-based counselling, make home visits during the early postpartum period, lead prenatal breastfeeding classes and *postpartum* support groups, and provide one-to-one support in the hospital setting.

(4) Furthermore, a large number of violations have been found in the study on labelling, the early introduction of complementary foods, the advertising/display and use of feeding bottles and teats in health care facilities and points of sale, and other devices including dummies (also known as pacifiers or soothers) and feeding cups with perforated lids. These point to the need for national authorities to pay increased attention to regulating their marketing. This should entail elaboration of standards for the safety, quality and design of breast pumps and feeding cups, including labelling requirements. Further, since follow-on/follow up infant formulas have been found to create confusion with starter infant formula, and that WHO has declared that they are not necessary, commercially available brands should be prohibited from the Tanzania market and instead, emphasis be laid on promoting the use of locally available, safe and nutritious complementary foods.

(5) Basing on the outcomes of this study, Dar es Salaam City and Morogoro Municipals authorities need to take the lead in assuming the initiative to change HCF practices, with sustained commitment. These institutional changes can be part of a comprehensive set of changes such as those implemented in pursuit of BFHI designation or they can be individual interventions such as increasing the rooming-in of mothers and babies and non-use of prelacteal meals. Mothers and caregivers often face challenges in implementing advice from health care professionals and at the same time from relatives and friends, on improving care and IYCF. Tackling this will entail the need to educate and train health care providers and ensure compliance with the regulations and the Code by implementing the Baby Friendly Hospital Initiative throughout the health care system. Besides, programs will be needed to maximise family and community involvement on the benefits of breast-milk to help them implement improved child-care and feeding practices at home.

(6) More studies that evaluate violations with respect to labelling of infant formula and studies that target mothers, private and rural hospitals could further describe the implementation status of the Code and the NRs in Tanzania to augment these findings which focused on urban subjects, in order to provide a complete contribution to a national policy review.

(7) In Tanzania, there are limited evaluations, assessments or studies demonstrating the impact or effectiveness of specific educational interventions carried out in relation to breastfeeding (e.g., distribution of handouts/leaflets, use of posters, counseling by the primary health care providers, group counseling during pediatric preventative care visits). There is need therefore, that such studies be carried out before more social marketing campaign messages or products for breastfeeding are developed.

(8) Agriculture and food seem to be linked. Tanzania needs to redefine the role and place of nutrition in the national agriculture policy, so that optimal infant and young child feeding practices are fully and effectively integrated in all political and socio-economic sectors through programmes, for a well nourished and dynamic population that is more productive and competitive. Government policy on food security should be based on the dictates of balanced diet, physical activity and optimal health, for nutrition security to the population.

(9) TFDA has oversight and control on food in the country but not on nutrition, which is under the oversight of TFNC. TFNC has oversight on both food and nutrition. On the other hand, TBS has jurisdiction on all matters pertaining to standardization and quality assurance for products of all description in industry and commerce. The best results in implementation of the Code and the NRs therefore, may be obtained when

the various stakeholders cooperate as willing partners, whether in programs involving multiple government agencies, public-private partnerships such as those for food fortification, or programs bringing together multiple development partners or co-financiers. Line agencies may form a National Food and Nutrition Committee chaired by the Prime Minister, served by a small secretariat and headed by the Secretary General of a National Economic and Social Development Board (NESDB) under the Ministry of Planning. The Committee will coordinate implementation of a programme set out in an annual national food and nutrition plan, with budgetary allocations controlled by NESDB, based on line agencies' performance. The relevant ministries will help draw up their parts of the plan and control its implementation so that they are motivated to perform. The Permanent Secretaries of the line ministries may meet monthly to coordinate their work in a set of food and nutrition programs in different sectors, run by different agencies.

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APPENDICES

Appendix 1: The ten steps to successful breastfeeding

The *Ten Steps to Successful Breastfeeding* are as follows:

1. Have a written breastfeeding policy that is routinely communicated to all health care staff.
2. Train all health care staff in skills necessary to implement this policy.
3. Inform all pregnant women about the benefits and management of breastfeeding.
4. Help mothers initiate breastfeeding within a half-hour of birth.
5. Show mothers how to breastfeed and how to maintain lactation even if they should be separated from their infants.
6. Give newborn infants no food or drink other than breast-milk, unless medically indicated.
7. Practice rooming-in—allow mothers and infants to remain together—24 hours a day.
8. Encourage breastfeeding on demand.
9. Give no artificial teats or pacifiers (also called dummies or soothers) to breastfeeding infants.
10. Foster the establishment of breastfeeding support groups and refer mothers to them on discharge from the hospital or clinic.

Appendix 2: Violations of the international code on labelling of breast-milk substitutes in Dar es Salaam and Morogoro Regions

	No. of products violating code	Recommends inappropriate age of introduction	No statement on superiority of breast feeding	Does not say use only on advice of health provider	No instructions for appropriate preparation	No warning against health hazards of inappropriate use	Pictures, drawings, or text idealizing use	No information on storage	Suggests/ recommends use of feeding bottle	No information on composition/ analysis	Inappropriate language[1]
Infant formula:											
Nestlé – Lactogen 1	2	1					1				2
Nestlé – Lactogen 2	1	1		1			1				1
Aspen S-26 Promil	1				1	1	1		1		1
Aspen – Infasoy	1			1			1		1		1
Wyeth – Nursoy	1	1		1			1		1		1
Abott – Isomil	1	1									
Milk-cereal complementary food:											
Nestlé – Cerelac	5	5		5		4	5				4
Plain cereal complementary food:											
Milupa	1	1		1		1	1				1
Nestlé – Nestum	1	1				1	1				1
Power Foods High Protein Porridge	1	1				1	1				
Power Foods – Nutritious flour	1	1	1	1	1	1	1	1		1	

Baby Drinks										
Milupa – Milutea	3	3		3			3		3	3
Fruit juice										
Purity	3						3			3
Fruit and vegetable juice blend										
Purity	2						2			2
Deserts										
Cow & Gate	2	2		2		2	2			2
Purity	1					1	1			1
Rusks										
HEINZ Farley's Rusks	2	1		1		1	1			1
Milupa Teething Rusks	1			1	1	1	1			1
Frester Holdings – Gripper bottle	1		1			1	1	1	1	1
Heinz Baby Corporation:Camera – teat	1		1			1	1	1	1	1
Heinz Baby Corporation: Camera – Silicone teat	1		1			1	1	1	1	1
Pacifiers										
Frester Holdings – Pacifier	1		1			1	1	1	1	1
Heinz Baby Corporation: Camera – Pacifier	1		1			1	1	1	1	1
Total	**35**	**20**	**6**	**16**	**3**	**19**	**32**	**6**	**11**	**30**

1_/ No label in Kiswahili was found