HEALTH WORKERS' KNOWLEDGE ON MOTHER TO CHILD TRANSMISSION OF HIV AND INFANT FEEDING OPTIONS AVAILABLE FOR HIV POSITIVE MOTHERS IN DAR ES SALAAM

BY

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A DISSERTATION SUBMITTED IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE DEGREE OF MASTER OF PUBLIC HEALTH IN THE UNIVERSITY OF DAR ES SALAAM

2005

CERTIFICATION

The undersigned certifies that he has read and hereby recommends for acceptance by the University of Dar es Salaam a dissertation entitled: **Health workers' knowledge on mother to child transmission of HIV and infant feeding options available for HIV positive mothers in Dar es Salaam**, in partial fulfillment of the requirements for the degree of Master of Public Health.



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DECLARATION

I hereby declare that this dissertation is my original work, and that it has not been submitted for a diploma or degree in any other University.

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DATE ..... 29/3/2006 .....

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ACKNOWLEDGEMENT

I would like to express profound gratitude to my employer the Tanzania Food and Nutrition Center (TFNC), for granting me permission to carry out my studies. My sincere thanks goes to Dr Godwin D. Ndossi the Managing Director of TFNC for his enormous support and understanding.

I am grateful to USAID through whose sponsorship I was able to participate in this course. Thank you for your assistance.

I am also grateful to my Director Dr Sabas Kimboka (Community Health Nutrition Department), Mrs Hilda Missano and Mr Jeje for their support.

Sincere thanks go to my supervisor Dr A.D. Kiwara for his guidance and advice while conducting the research and as I wrote this dissertation. Furthermore, I would like to thank Mr C.K. Makwaya and Mr F. Mayunga of the Department of Biostatistics for their assistance, tolerance and for always being there to help.

Thanks also go to my research assistants Mr Riziki Kisonga, Miss Zuhura Nkrumbi, Mr Godfrey Mchele and Mr Igenge John.

Lastly but not least, special thanks to my mother Salma M.K. Abdulla and brothers Dr Salim M.K. Abdulla and Dr Ahmed Abdallah for their moral and spiritual support and encouragement that facilitated the completion of my studies.

DEDICATION

To my parents, especially my mother who raised, supported and gave me education which enabled me to be what I am today, and my late beloved father who always reminded me that hard work is always rewarding.

ABSTRACT

A cross sectional study was conducted in three Districts (Ilala, Kinondoni, and Temeke) of Dar es Salaam Region in June 2005. The aim of the study was to determine health workers knowledge on Mother to Child Transmission of HIV and infant feeding options available for HIV positive mothers.

The study objectives were to determine knowledge of health workers on MTCT and infant feeding options available for HIV positive mothers. Determining explanatory factors of these levels of knowledge, source of the health workers information and problems faced by the health workers when giving advice to HIV Infected mothers. Also to determine whether health workers are trained on HIV and infant feeding.

A total of 255 health workers from various government and private health facilities were interviewed. Stratified random selection was applied in the selection of private and government health facilities and also on selection of level of health facility. Simple random sampling method was used in selecting health facility within strata. In the selected health facility all the health workers eligible for the study were interviewed. nformation was obtained by using structured questionnaire with both closed and open-nded questions.

In-depth interview was conducted with managers of HIV/AIDS related health projects and officials in the Ministry of health. A semi-structured questionnaire with open-ended questions was used. Questions asked were on policy issues, training of the health workers and dissemination of information to the target population.

Data entry, cleaning and analysis was done using Epi info 6 package.

The main findings of the study showed that 71.8% of respondents had moderate level of knowledge on MTCT of HIV whereby a higher proportion of respondents from government (73.3%) had moderate level compared to the private (69.7%). The most known mode of MTCT of HIV was transmission through breastfeeding. Poor level of knowledge on infant feeding option was found in 52.9% of respondents whereby a higher proportion of respondents with poor knowledge were from private health facilities. The most common breast milk option mentioned was exclusive breastfeeding for six months and commercial infant formula as replacement feeding option. Explanatory factors of the levels of knowledge were cadre of the respondent, education, ownership and level of health facility, training status of the respondent on HIV and infant feeding. Sources of information for majority of the health workers (64.7%) was through mass media such as radio and TV. 44.3% mentioned on the job training as source of where they learn about MTCT and infant feeding options available. A lower

proportion of respondents (19.3%) from private facilities got informed through seminars compared to government 23.9%.

There was inadequacy of IEC materials on infant feeding in all private and government health facilities. IEC materials such as brochures, posters and leaflets on MTCT were found in a slightly higher proportion in government health facilities 33.6% compared to private 12.8%.

Problems faced by the health workers when giving advice to HIV positive mothers include financial constraints of the mothers, stigma attached to HIV, inability to implement choices by HIV positive women, lack of VCT services, lack of knowledge on infant feeding options available for HIV positive mothers and heavy workload which lead to respondents not having enough time to talk to the mothers.

Training of health workers on HIV and infant feeding was found to be inadequate as only 14.1% out of 255 respondents were trained, those trained majority were from government health facilities compared to private. A slightly higher proportion of trained respondents were from health centers compared to other levels of health facility. Also a higher proportion of trained respondents were from MCH clinics compared to labor ward and pediatric wards.

HIV and infant feeding is not included in training curricula of health care providers. Some health workers have received training on HIV and Infant feeding, however, retraining of health care providers on these was lacking due to inadequacy of funds.
It was established that there is lack of VCT and PMTCT services and also lack of National policy on HIV and infant feeding and clear strategies to decrease stigmatization of those affected by HIV.

Recommendations given were that there is need to conduct trainings and seminars on HIV and infant feeding to health workers in both public and private health facilities. HIV and infant feeding be integrated in pre service medical and nursing curricula. Promote use of mass media (radio, newspapers, brochures and leaflets) in disseminating information on infant feeding options in both public and private health facilities. Relevant authorities e.g. MOH, NGOs and Institutions should organize public education campaigns and provide education materials that address MTCT, infant feeding, stigma and discrimination for community use. The government to develop National Policy on HIV and infant feeding so as to provide guidance to the different stakeholders in the field of infant and young child nutrition.

Expand the existing services of PMTCT and VCT sites to areas where they are not available.

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ABBREVIATIONS

AIDS	Acquired Immune Deficiency Syndrome
ARV	Anti Retro Viral
CHMT	Council Health Management Team
COUNSENUTH	Center for Counseling, Nutrition and Health Care
EPP	Estimation and Projection Package
HIV	Human Immunodeficiency Virus
IEC	Information Education Communication Materials
IMCI	Integrated Management of Childhood Illness
MCH	Mother and Child Health Services
MUCHS	Muhimbili University College of Health Sciences
MTCT	Mother to Child Transmission
NACP	National AIDS Control Program
PASADA	Pastoral Activities and Services to people with HIV/AIDS Dar es Salaam Archdiocese
PMTCT	Prevention of Mother to Child Transmission of HIV
RHMT	Regional Health Management Team
STD	Sexually Transmitted Diseases
TFNC	Tanzania Food and Nutrition Center
TDHS	Tanzania Demographic and Health Survey

THIS	Tanzania HIV/AIDS Indicator Survey
TOT	Training of Trainers
TRCHS	Tanzania Reproductive and Child Health Survey
UNAIDS	United Nations Programme on HIV/AIDS
UNICEF	United Nations Children's Fund
VCT	Voluntary Counseling and Testing
WHO	World Health Organization

CHAPTER ONE

1.0 INTRODUCTION

In Tanzania the level of HIV infection is high with a transmission rate of 7% among adults aged 15 to 49 years. The prevalence rate among women is 8% and among men it is 6%. The HIV epidemic shows strong regional variation, regions with the highest HIV prevalence are Mbeya 14%, Iringa 13% and Dar es Salaam 11% (THIS, 2004).

The main modes of HIV transmission in the country and their extent of infection in the year 2003 are summarized in table 1 below:

Table 1: Modes of transmission of HIV

Mode of transmission	**Extent of infection (%)**
Heterosexual	76.8
Mother to child transmission (MTCT)	5.4
Blood transfusion	0.5
Not exactly established	16.7

Source: NACP 2003

The National Aids Control Programme (NACP) data showed that a total of 147,377 individuals donated blood during the year 2003. All were aged more than 15 years, with the majority of blood donors being males (82.6%). The overall prevalence of HIV infection among blood donors during 2003 was 8.8%.

A study by Massawe and Lyamuya (2002) indicated that for Dar es Salaam region alone, the prevalence of HIV in women visiting antenatal clinics was12% and a total of vertical transmission rate of approximately 40%.

Using Estimation and Projection Package (EPP) it is estimated that 1,800,000 people were living with HIV, among them 840,000 were males and 960,000 were females for the year 2003 in Tanzania mainland alone. On the basis of estimation that only 1 in 4 AIDS cases are reported, a total of 187,940 cases are likely to have occurred in the year 2003 alone, females being 98,290 and males being 89,650. In the absence of antiretroviral drugs (ARV), it is estimated that annual deaths of AIDS in Tanzania mainland for the year 2003 were 186,900 of which 88,510 were males and 98,860 were females (NACP 2003)

Mother to child transmission of HIV/AIDS

Mother to child transmission (MTCT) of HIV is an urgent and growing problem in poor countries like Tanzania. It has been estimated that without taking preventive measures, the risk of transmission in Sub-Saharan Africa is 21-45 % (Msellati et al, 1995) with breastfeeding accounting for at least a third of the risk (Peckham et al, 1995).

Mother to child transmission of HIV in Tanzania is set to have a dramatic impact on child survival. Using an estimated HIV prevalence rate of 12% for antenatal women and

a total vertical transmission rate of approximately 40%, it is estimated that 72,000 babies will become infected with HIV from their mothers (approximately 25,000 through breast feeding per year.) Ten percent of these babies would have died anyway in the absence of HIV in the first year of life from common childhood diseases, so MTCT accounts for the additional 64,800 child deaths. Adding 64,800 to the existing 150,000 child deaths from common childhood infections thus represents a 43% increase in infant mortality (PMTCT national guidelines 2004) .The main source of HIV infection in young children is MTCT of the virus, with an estimated risk of 5-10% during pregnancy, 10-20% during labor and delivery and 5-20% through breast feeding. (De Cock et al, 2000).

Breastfeeding is said to be responsible for as much as one third to one half of all HIV infections in infants and young children in African settings. Recent studies suggest that exclusive breastfeeding during the first months of life may be associated with a lower risk of HIV transmission than mixed feeding (Coutsoudis et al, 2001).

A child breastfed from a woman who is HIV positive has about 15% risk of infection through breastfeeding when neither the mother nor the baby are receiving any anti retroviral drug treatment. Considering communities with a 20% HIV infection rate three infants out of a hundred are likely to be infected through breastfeeding (Linkages, 1998).

According to Linkages (1998), for HIV positive mothers who have chosen to breastfeed or whom breastfeeding is the only option available particularly in resource poor settings, where mothers cannot afford to bottle feed safely, it is possible to promote safer breastfeeding. Women can be informed of the dangers of mixed feeding and supported to breast feed exclusively for a short period. Actually, HIV infected mothers are faced with the dilemma on how to feed their infants because of fear of HIV. Thus, there is an urgent need for HIV infected mothers to be given supportive counseling and information regarding infant feeding options so as to allow them to make an informed decision. Mothers might opt for several options, including breastfeeding milk options as listed below.

Breast milk options

1) Exclusive and Continued breast feeding:

   This is full breastfeeding with exclusive breastfeeding for the first six months. The baby consumes only milk and nothing else not even water. After six months it is followed by continued breastfeeding plus complementary foods up to 2 years.

2) Early cessation of exclusive breastfeeding: Breast milk is stopped early at 3 or 4 months and the baby is given other forms of feeds such as animal milk or infant formula.

3) Expressed and heat-treated breast milk: It involves boiling of the expressed breast milk.

4) Wet nursing: this is breastfeeding by a woman who is not the infant's biological mother.

Non-breast milk options (Replacement feeding options)

The other feeding option is replacement feeding which is a process of feeding a child who is not receiving any breast milk with a diet that provides the entire nutrient a child needs until it is fully on complementary foods.

Replacement feeding includes.

1) Home modified animal milk: Fresh or processed animal milk that is modified by adding water, sugar and micronutrient supplements.
2) Commercial infant formula: A breastmilk substitute formulated industrially to satisfy the nutritional requirements of infants during the first months of life. It is usually a powder that has to be reconstituted with water.

However, it is important for HIV infected mothers to be informed that diseases such as diarrhea, respiratory infections and malnutrition remain a major cause of infant morbidity and mortality and that breast feeding is the most effective strategy for improving health because of its well recognized nutritional, immunological, social and nurturing benefits. Naturally, breast milk contains enough water and nutrients for fostering optimal growth and development of the baby and also antibodies, growth

factors and plenty of vitamin A, which protects the baby against infection by strengthening the immune system.

It is widely known that in Tanzania infectious diseases and malnutrition are the main causes of infant deaths. Apart from that, there is poor hygiene, and lack of safe water due to poverty. As a result it is difficult to find safe alternatives to breast milk. So, if such alternatives are exercised then the risk of babies dying will be much greater than the risk of passing on HIV.

1.1 STATEMENT OF THE PROBLEM

Judging from the literature findings and the fact that Tanzania is one of the countries most hit by the HIV/AIDS pandemic south of Sahara, there is need to do whatever is possible to minimize the transmission of HIV infection from mother to child. There are several strategies which can be used to reduce MTCT of HIV, these being the use of ARVs, modified obstetric care and infant feeding options (Piot et al, 1999; Rashid et al, 2005). Mothers who are HIV positive should be provided with adequate information on how to feed their children, consequently accurate knowledge on HIV transmission and feeding options enables women to make informed decision about the type of feeding that suits them best and which can be practiced safely. Mothers often request advice from health workers and since in Tanzania as it is the case in other African countries health care workers advice is taken seriously, it is therefore important that health workers are adequately informed about MTCT and infant feeding practices and have high quality up to date information to impart. The issue is these health workers knowledgeable enough on this emerging area? Are they trained? Are there problems in communicating this information to the targeted group in Antenatal (ANC) clinics or elsewhere?

Based on that, this study was conducted to assess the knowledge of health workers on MTCT of HIV and the infant feeding options available for HIV positive mothers and also determine the problems encountered by the health workers in giving advice to HIV infected mothers. The study was designed to take place in Dar es Salaam, which

according to THIS (2004) ranks third amongst the three most affected Regions in Tanzania (Prevalence - Mbeya (14%), Iringa (13%) and Dar es Salaam 11%).

1.2 RATIONALE OF THE STUDY

This study aimed at: examining the knowledge of health workers on MTCT, infant feeding options, determining sources of their information and if they are trained on HIV and infant feeding. Health workers knowledge has influence on the type of advice they give to their clients regarding prevention of MTCT, and appropriate and feasible infant feeding options. The findings of the study will first of all help in pointing out the existing gap/weakness in the knowledge of health workers in relation to HIV and infant feeding and thus assist the policy makers and programme managers develop strategies that will improve health worker performance. This will contribute to the reduction of mother to child transmission of HIV and consequently reduce infant morbidity and mortality.

1.3 STUDY OBJECTIVES

Broad Objective

To assess the knowledge of health workers on MTCT and infant-feeding options available for HIV infected mothers.

Specific Objectives

1) To assess the knowledge of health workers on MTCT of HIV.
2) To assess the knowledge of health workers on infant feeding options available for HIV infected mothers.
3) To determine explanatory factors of the levels of knowledge.
4) To determine the source of information for health workers on infant feeding options for HIV infected mothers.
5) To determine the problems encountered by the health workers in giving advice to HIV Infected mothers.
6) To determine whether health workers are trained on HIV and Infant feeding options.

CHAPTER 2

LITERATURE REVIEW

In developing countries HIV is a big problem and it has become an increasing cause of death to children through perinatal exposure from their infected mothers. It is estimated that 20% to 40% of infants born to infected mothers acquire HIV infection from their mothers (John et al, 1991). Infants can acquire HIV infection from their mothers during pregnancy, labor and delivery or through breastfeeding. If no interventions are in place to reduce MTCT an estimated 5 to 10 percent of transmission will occur during pregnancy, 10 to 15 percent during labor and delivery and 5 to 20 percent through breastfeeding (Linkages, 2005)

In Africa replacement feeding is uncommon and many HIV positive women are choosing to breastfeed (Kiarie et al, 2004). In Tanzania, all alternatives to breastfeeding were considered too expensive, but cows' milk was thought to be the best option (de Paoli et al, 2000). That being the case, there is an urgent need of finding ways to make breastfeeding safer for HIV positive women living in resource limited settings. Exclusive breastfeeding is recommended both nationally and internationally because it protects infants from morbidity and mortality whether or not HIV related (Victoria et al, 1987). It has been reported by Coutsoudis et al (1999) that HIV exposed infants who

were exclusively breastfed for at least 3 months had lower risk of HIV infection than mixed fed infants.

Breastfeeding is traditionally and a socially accepted way of feeding children for the first 2 years of life in Tanzania. According to the 1992 Tanzania Demographic and Health Survey (TDHS), it was found out that in urban and rural areas 95% and 98% respectively of all under-fives were breastfed and that overall, 95% of babies 12 to15 months of age were still being breastfed. The rate of exclusive breastfeeding among children less than one month of age was 48%, this figure declined to 24% at the ages of 2-3 months and further to 8% at the ages of 4-5 months. The 1996 TDHS however, shows that infants who were exclusively breastfed are 55% at the age of 0-1 months, 27% at 2-3 months and 8% at 4-6 months.

In a study done in Kilimanjaro region in Tanzania it was found out that few infants were exclusively breastfed and that the benefits of exclusive breastfeeding by HIV mothers were being questioned by pregnant women (De Paoli et al, 2001). One report showed that 5% of children in developing countries become HIV positive through breastfeeding, and HIV transmission risk increases 3% per child year as breastfeeding continues (Leroy et al, 1998). Another study showed that, bottle feeding or breast milk substitutes, if safe and available may prevent infection of 10% of children exposed perinatally (UNAIDS, UNICEF and WHO 1998). Breastfeeding is usually the healthiest choice for both infants and mothers. For infants, breastfeeding has nutritional and psychological benefits, and

can prevent disease and infection. For mothers, breastfeeding can increase time between births and protects against ovarian and breast cancers. Bottle-feeding requires clean water for mixing formula. Many women in developing countries do not have access to clean water or sanitation. Many women cannot afford the formula and, therefore, cannot refrain from breastfeeding (Bobat et al, 1997). In developing countries where breastfeeding is norm, bottle-feeding may be seen as a flag for women's HIV status, which may invite stigma or other negative repercussions.

A study done in Central Tanzania (Burke, 2004) showed that resource limitation, the stigma of HIV and AIDS, widespread fear of HIV testing and insufficient education present a challenge to adaptation of Prevention of Mother to Child Transmission (PMTCT) interventions. Strong beliefs about maternal nutrition, milk production and infant hunger lead to early complementation of food. Breast milk substitutes, especially modified cow milk are used in the case of breast problems, return to work and pregnancy. HIV positive women who choose not to breastfeed may be assumed to have some problems. The high cost of milk and the need for cleanliness and instructions are barriers to replacement feeding. Formula feeding and heat treating the milk were considered to be impractical, except for some urban people with salaries, because these processes are complex and time consuming.

Another study done in Zimbabwe by Peter (2002) showed that introduction before age 3 months of solid foods or animal milks to breastfeeding infants born to HIV mothers was associated with a 4 fold greater risk of transmission compared to exclusive breastfeeding. These findings indicate that early introduction of non-human milks and solid foods conveys especially high risk, but even the non-milk liquids are likely to increase risk. Thus, the more strictly HIV positive mothers are able to breastfeed exclusively the lower the risk of HIV transmission. Another study conducted in four African countries by Latham (2001) showed that infants in poor households who are not breastfed are five times more likely to die from infections in the first two months of life and have a much higher risk of getting diseases that are costly to parents and thus the risk of not breastfeeding is much higher than the risk of HIV infection through breastfeeding.

Findings from various studies (de Wagt, 2000) have indicated that there is lack of knowledge among health workers and that the knowledge of health workers on HIV and infant feeding is poor, as is their knowledge of breastfeeding. It seems that information on the risks of MTCT through breastfeeding has confused many health workers and raised doubts about how best to support mothers. Some of the information they received for instance through the media is incorrect and can be harmful. A similar lack of knowledge and mistaken beliefs also exist among the general population and pregnant women in particular. There is a danger that mothers who do not know their HIV status,

and this is a large majority of mothers, might decide to stop breastfeeding or to alter their breastfeeding practices unnecessarily. It is thus important that training on breastfeeding counseling and on HIV and infant feeding is not restricted to counselors in the PMTCT sites. Ideally all health workers who are in contact with pregnant women and with infants and young children should be trained. Therefore special training on HIV and infant feeding for health workers, in service and pre service, should be conducted.

Another study conducted in northern Tanzania (De Paoli et al, 2002) showed that infant feeding options were not always accurately explained, and that counselors believed that most women had little choice but to breastfeed. It was apparent that the risk and benefit of the options open to HIV infected women were complicated not only to the women but also to the counselors. In another study done in Nigeria (Adejuyigbe and Odebiyi, 2004) on HIV and infant feeding counseling that looked at knowledge, attitude and practice of health workers, found out that only one out of thirty seven health workers respondents was aware of existence of a National policy on HIV and infant feeding and none had been trained on HIV and infant feeding counseling. Most of the health workers were aware of MTCT but majority of the midwives believed that all infants of HIV positive mothers will be infected by the virus if breastfed. However, all the obstetricians believed that exclusive breastfeeding rather than mixed feeding was more likely to increase the chances of MTCT. According to the study, use of commercial infant formula and wet

nursing were the only feeding options most of the health workers were familiar with. In practice majority of the respondents directed infected mothers to use commercial infant formula regardless of their socioeconomic status. It was thus concluded that most of the health workers had inadequate knowledge in providing appropriate feeding counseling to HIV infected mothers and hence the need of training on the part of the health workers.

CHAPTER 3

METHODOLOGY

3.1 Study Area

The study was conducted in all the three Municipals of Dar es Salaam (Temeke, Kinondoni and Ilala). Dar es Salaam is the largest city in Tanzania and is the main business center in the country. Its population is estimated to be around 2,497,940 whereby 1,261,077 (50.5%) are males and 1,236,863 (49.5%) are females (Census 2002). The average household has 4.2 members and the inter-censal growth rate is 4.3%. Dar es Salaam region is located along the Indian Ocean; it is bordered by the Coast Region in the West and North and by Lindi Region in the South. It has a mixture of people coming from different ethnic tribes of Tanzania, as well as people of Indian, Arab and European descent.

The health care delivery system in Dar es Salaam comprises of public sector as well as private sector as illustrated in the Table 2 below.

Table 2: Health delivery system in Dar es Salaam

	PUBLIC			PRIVATE			TOTAL
	TEMEKE	KINONDONI	ILALA	TEMEKE	KINONDONI	ILALA	
HOSPITAL	1	1	2	2	8	5	19
HEALTH CENTRE	2	2	2	5	4	12	27
DISPENSARY	23	20	13	74	132	99	361

Source: Field data

3.2 Design of the study

The study design was cross sectional survey. This method was found to be appropriate here due to time and financial resource constraints

3.3 Study population

There were two study populations: the first study population comprised of health workers working in the health facilities. Categorically, it included medical doctors, assistant medical officers, clinical officers, nursing officers, nurse auxiliaries, MCH aides and Nurse Midwives. The study included those health workers from the pediatric wards, labor wards and MCH clinics. Basically, the population comprised of those health workers who take care or come into contact with HIV positive mothers and their infants. The second study population was made up of four key-informants purposely selected for information gathering. These included managers of health projects/programmes, high rank officials in the Ministry of Health who elaborated logistical and policy issues. Only four of these were interviewed, as some of those targeted were not available at the time of interviews.

3.4 Sampling method

Sampling covered government and privately owned hospitals, health centers and dispensaries in Kinondoni, Ilala and Temeke Municipalities. Stratification of health facilities was done in selecting private and government health facilities, stratification was also done on the basis of the level of health facility i.e. hospital, health center and

dispensary. A list of facilities to be selected was prepared and then simple random sampling method (through a lottery system) within strata was used in selecting the health facilities. In each municipal one government and two private hospitals, one government and two private health centers and also six government and six private dispensaries were chosen. In the selected health facility (hospitals, health centers and dispensaries) all the health workers eligible for the study were interviewed.

3.5 Sample size estimation

The sample size of health workers for the study was determined by applying the following formula by Kirkwood and Steve (2003)

$$n = \frac{z^2 p(100-p)}{d^2}$$

Where,

n = the minimum desired sample size

z = the standard normal deviate, (normally set at 1.96 which corresponds to a 95% confidence level of parameter estimation).

d = the degree of accuracy desired, (this was set at 7 %)

p = expected proportion of health workers with knowledge on MTCT (this was put at 50% as it was previously not known)

Substituting these figures in the above formula gave a minimum required sample size of 196.

To take into account the probability of non-response the sample size was then adjusted. Assuming a 10% non-response among the potential study participants, the minimum sample size was set at 216. Since the sampling unit was a health facility, the final size of the study sample (respondents) then came to 255 from the sampled health facilities. That is, since as all the health workers who were eligible for the study found in the health facilities had to be selected for the study, the final sample size came to 255.

3.6 Research and data collection method

The research was conducted using both quantitative and quantitative methods.

Structured interviews were used in the process of data collection.

Research instruments:

Data collection in the quantitative method consisted of structured questionnaire with open and closed ended questions. The questionnaire was designed to collect all the required information for the study. The questions asked included knowledge on MTCT, knowledge on infant feeding options, source of information on infant feeding options, personal information, training of health workers and problem faced when disseminating information. A Kiswahili version of the questionnaire was used in the data collection.

Qualitative data collection involved doing Indepth interviews, which were conducted using a semi-structured questionnaire where all questions were open ended. Most of the questions here were focus on policy issues such as the existence of national policies, guidelines and training manuals on infant feeding, dissemination of information on HIV, MTCT and Infant feeding to the target population and also issues on training and retraining of health care providers.

Data collection procedure:

The principal researcher with the help of four research assistants collected data. One day training was conducted to the research assistants on the use of the data collection tool

before the survey. The research assistants were university students with previous experience in community surveys. A pilot test was conducted in a health facility, which was not among the selected facilities for actual data collection to confirm sample size of the research and to check appropriateness of the research tools.

3.7 Data processing and analysis:

Data coding was done manually and all the questionnaires were checked for completeness and accuracy. Data entry, cleaning and analysis was done using Epi - info 6 package.

Health workers knowledge was assessed using a series of questions. Answers were assessed as being correct or incorrect if the health worker gave any of the listed possible answers. No probing was done except repeating questions when necessary to enable the health worker to understand.

Scoring of the answers to the questions and subsequently measuring knowledge on the basis of the scores was done as follows:

Right answers on each aspect of MTCT and infant feeding asked was given a score of one point (one score) while wrong answers (any other response apart from the right

answer) received no point (zero score). All the scores for each individual on knowledge on infant feeding and MTCT were summed up. Categorization of level of knowledge was done as follows:

Maximum score = 26

Categorization of level of knowledge on MTCT

Score	**Level of knowledge**
0 –9	Poor
10 –18	Moderate
19+	Good

Thus the above categories of the generated scores constituted the operational definition of whether poor, moderate or good knowledge on MTCT of HIV.

Likewise, knowledge on infant feeding options was graded as follows:

Maximum score = 64

Categorization of level of knowledge on Infant feeding options

Score	**Level of knowledge**
0 - 21	Poor
22 - 42	Moderate
43+	Good

3.8 Ethical clearance:

Ethical approval for conducting the research was sought for, from the MUCHS College Research and Publications Committee.

Permission to conduct the study was obtained from the respective Municipal authorities.

Informed consent (verbal) was obtained from all study participants.

Place and time of the interview was negotiated between the interviewers and the participants. Confidentiality was maintained, as questionnaire did not bear names of the participants.

3.9 Study limitations:

The following limitations to the research were encountered in the course of the fieldwork.

1. Limitations such as reluctance of some health workers to be interviewed due to the tight work schedule. This resulted in interviewers having to wait for hours for the health workers to be free so as to interview them.
2. Rescheduling of appointments had to be done at private health care facilities because of double appointments.
3. One of the researches assistant had malaria and so more days than planned were needed to complete interviews.

4.0 Social significance of the study

The study helped in identifying the weakness in the provision of information on HIV, MTCT and Infant feeding options to HIV positive mothers by the health workers. The results obtained will help in designing interventions such as improvement of the training curriculum of the health workers, retraining and finding effective ways of disseminating information to the targeted population. This will ensure health workers having high quality and up to date information for dissemination to patients. Effective ways of information dissemination will increase awareness in the community at large and not just for HIV infected mothers and thus attainment of support and motivation of partners and community. By doing so we will decrease infant morbidity and mortality and thus having a strong nation.

CHAPTER 4

RESULTS

A total of 255 health workers from the three municipalities of Dar es Salaam were interviewed, among whom 30.6% (78) were from Ilala municipal, 31.8 %(81) from Kinondoni municipal and 37.6% (96) from Temeke municipal.

Table 3 shows that nurse officers/nurse midwives formed the highest proportion of study respondents followed by MCH aiders i.e. 54% and 19.2% respectively.

Table 3: Cadre of respondents interviewed by facility ownership

	Government N=146		Private N=109		Total N=255	
Cadre	**No**	**%**	**No**	**%**	**No**	**%**
Medical Officer/ Assistant Medical Officer	2	1.4	13	11.9	15	5.9
Clinical Officer/Assistant Clinical Officer	8	5.5	16	14.7	24	9.4
Nurse Officer/ Nurse Midwife	86	58.9	52	47.7	138	54.1
Enrolled Trained Nurse	1	0.7	6	5.5	7	2.7
MCH Aider	36	24.6	13	11.9	49	19.2
Nurse Auxillaries	13	8.9	9	8.3	22	8.6
Total	**146**	**100.0**	**109**	**100.0**	**255**	**100.0**

Socio Demographic characteristics of the study respondents

A slightly higher proportion of respondents 57.3 % (146) were from government health facilities and 42.7 % (109) were from private health facilities. Their ages ranged from 27 to 62 years with the highest proportion of them (41.2%) being in the age group ≤ 35 years (see table 4). Respondents from private facilities tended to be younger than those from public facilities i.e. 50.5% of private facility respondents were aged ≤ 35years compared to 34.5% of public facility respondents. The majority of the respondents were females i.e. 88.6%.

Overall, 52.9% respondents had secondary education with only 2.4% of them having attained higher education. The highest proportion of respondents from public facilities had primary education (56.2%) while those from private facilities had secondary education (65.1%).

Respondents working in dispensaries made up 43.1% of the study sample followed by those working in hospitals (36.9%). The majority of the respondents were stationed in MCH clinics regardless of facility ownership i.e. 61% from government and 65.1% private facilities respectively.

Table 4: Socio demographic characteristics of study respondents (N = 255)

	Ownership					
Age	**Government n =146**		**Private n =109**		**Total n = 255**	
	No	%	No	%	No	%
≤ 35	50	34.3	55	50.5	105	41.2
36 –45	52	35.6	34	31.2	86	33.7
≥ 46	44	30.1	20	18.3	64	25.1
Sex						
Male	6	4.1	23	21.1	29	11.4
Female	140	95.9	86	78.9	226	88.6
Level of Education						
Primary education	82	56.2	32	29.4	114	44.7
Secondary education	64	43.8	71	65.1	135	52.9
Higher Education	0	0.0	6	5.5	6	2.4
Level of Health Facility						
Hospital	53	36.3	41	37.6	94	36.9
Health Center	29	19.9	22	20.2	51	20.0
Dispensary	64	43.8	46	42.2	110	43.1
Department						
Labor Ward	40	27.4	24	22.0	64	25.1
MCH Clinic	89	61.0	71	65.1	160	62.7
Pediatric Ward	17	11.6	14	12.8	31	12.2

KNOWLEDGE OF RESPONDENTS ON MTCT OF HIV

Respondents were asked to spontaneously mention the modes of MTCT of HIV that they knew. (See table 5). The most common mode of transmission known to the majority of respondents was through breastfeeding (98.8%) followed by transmission during delivery (95.7%). Only one respondent from a government facility was not able to mention any of the modes of mother to child transmission of HIV. The proportion of respondents mentioning the different modes of transmission is almost similar when compared by facility ownership.

Table 5: Respondents knowledge on modes of MTCT of HIV by ownership of health facility

Modes of transmission of HIV	Government n=146		Private n=109		Total n=255	
	No	%	No	%	No	%
Breastfeeding	143	97.9	109	100.0	252	98.8
Delivery	139	95.2	105	96.3	244	95.7
Pregnancy	120	82.5	89	81.7	209	81.9
Do not know	1	0.7	0	0.0	1	0.4

Respondent's level of knowledge on MTCT of HIV in relation to ownership of health facility.

Respondents' knowledge on MTCT was established using a series of questions (See appendix 1). Their level of knowledge was classified as poor, moderate or good after analyzing the scores that they had obtained on those questions (See page 23).

From table 6 it is seen that overall 71.8% of the respondents had moderate level of knowledge on MTCT, with only 6.7% having good level of knowledge. A higher proportion of respondents from government facilities compared to those from private facilities had moderate level of knowledge i.e. 73.3% versus 69.7% respectively. However, a higher proportion of respondents from private facilities compared to those from government facilities had good level of knowledge on MTCT i.e. 9.2% versus 4.8% respectively. The difference observed in the findings is however not statistically significant. (P=0.38)

Table 6: Respondents level of knowledge on MTCT in relation to health facility ownership.

	Level of knowledge on MTCT						
	Poor		**Moderate**		**Good**		**Total**
Ownership of health facility	No	%	No	%	No	%	
Government	32	21.9	107	73.3	7	4.8	146
Private	23	21.1	76	69.7	10	9.2	109
Total	**55**	**21.6**	**183**	**71.8**	**17**	**6.7**	**255**

KNOWLEDGE OF RESPONDENTS ON INFANT FEEDING OPTIONS

Respondents were asked to spontaneously mention the infant feeding options for HIV positive mothers that they knew (see table 7). The most common breast milk option mentioned was exclusive breastfeeding (43.5%). Only 18 respondents mentioned wet nursing. Out of the 255 health workers interviewed, 35.7 % (91) could not mention any of the breastfeeding options. A higher proportion of respondents from private facilities compared to those from the government facilities i.e. 40.4% versus 32.2% respectively could not mention any breastfeeding options. The two most common replacement feeding options known to the majority of the respondents (91.8%) was commercial infant formula followed by home modified animal milk (84.7%). One respondent could not mention any of the replacement feeding options.

Table 7: Respondents knowledge on infant feeding options for HIV positive mothers by ownership of health facility

Infant feeding options	Government n= 146		Private n=109		Total n=255	
Breastfeeding options	No	%	No	%	No	%
Exclusive b/feeding 6 months	72	49.3	39	35.8	111	3.5
Early cessation of exclusive b/feeding	35	23.9	20	18.3	55	1.6
Expressed and heat treated breast milk	23	15.8	10	9.2	33	12.9
Wet Nursing	7	4.8	11	10.0	18	7.1
Don't know	47	32.2	44	40.4	91	35.7
Replacement feeding options (breast milk substitute)						
Home modified animal milk	122	83.6	94	86.2	216	84.7
Commercial infant formula	132	90.4	102	93.5	234	91.8
Don't know	1	0.6	0	0.0	1	0.4

N.B Multiple responses

Respondents' level of knowledge on infant feeding options in relation to ownership of health facility

Respondents' level of knowledge on infant feeding options was assessed by scoring a series of questions and classified as poor, moderate or good (See page 23). Table 8 shows that out of the 255 health workers interviewed 52.9% (135) had poor knowledge while 46.7% (119) had moderate level of knowledge and only 0.4% (1) had good level of knowledge on infant feeding options. A slightly higher proportion of respondents

from private health facilities had poor level of knowledge compared to those from government facilities i.e. 55.5% versus 51.4% respectively. However the difference is not statistically significant (P=0.41)

Table 8: Respondents level of knowledge on infant feeding options in relation to ownership of health facility

Ownership	Poor		Moderate		Good		Total
	No	%	No	%	No	%	No
Government	75	51.4	71	48.6	0	0.0	146
Private	60	55.0	48	44.0	1	0.9	109
Total	**135**	**52.9**	**119**	**46.7**	**1**	**0.4**	**255**

EXPLANATORY FACTORS OF LEVELS OF KNOWLEDGE

Explanatory factors of level of knowledge on MTCT of HIV

Table 9 shows that the highest proportion of respondents with good level of knowledge on MTCT were in the Medical Officers/Assistant Medical Officers category followed by Clinical Officers/Assistant Clinical Officers category i.e. 33.3% and 16.7% respectively. All Enrolled trained Nurses had moderate level of knowledge on MTCT. Nurse Auxillary category had the highest proportion of individuals with poor knowledge on MTCT i.e. 40.9%. The difference observed is statistically significant (P< 0.01).

Good level of knowledge on MTCT appears to be influenced by education status i.e. 16.7% among respondents with higher education, 8.9% among those with secondary

education and 3.5% among those with primary education. A higher proportion of respondents from health centers had good level of knowledge on MTCT compared to those from other levels i.e. 13.7% from the health centers, 6.4% hospitals and 3.6% dispensaries. Training status was found to influence level of knowledge on MTCT with 11.1% of trained respondents having good knowledge compared to 5.9% untrained.

Table 9: Explanatory factors of respondents' level of knowledge on MTCT of HIV

	Poor		Moderate		Good		Total	P - value
Cadre	No	%	No	%	No	%	No	
Medical Officer/ Assistant Medical Officer	1	6.7	9	60.0	5	33.3	15	
Clinical Officer/ Assistant Clinical Officer	4	16.7	16	66.7	4	16.7	24	
Nursing Officer/ Nurse Midwife	24	17.4	107	77.5	7	5.1	138	
Enrolled Trained Nurse	0	0.0	7	100.0	0	0.0	7	
MCH Aider	17	34.7	31	63.3	1	2.0	49	
Nurse Auxillaries	9	40.9	13	59.1	0	0.0	22	P<0.01
Level of education								
Primary education	32	28.1	78	68.4	4	3.5	114	
Secondary education	22	16.3	101	74.8	12	8.9	135	
Higher education	1	16.7	4	66.7	1	16.7	6	P<0.01
Level of health facility								
Hospital	20	21.3	68	72.3	6	6.4	94	
Health center	11	21.6	33	64.7	7	13.7	51	
Dispensary	24	21.8	82	74.5	4	3.6	110	P=0.21
Training on HIV infant feeding								
Trained	5	13.9	27	75.0	4	11.1	36	
Not trained	50	22.8	156	71.2	13	5.9	219	P=0.29

Explanatory factors of level of knowledge on infant feeding options available for HIV positive mothers

Table 10 shows that only one respondent (6.6%) from Medical Officers/Assistant Medical Officers category had good level of knowledge on infant feeding options. The highest proportion of respondents with moderate level of knowledge on infant feeding options were in Medical Officers/Assistant Medical Officers category followed by Nursing Officer/Nurse Midwife category i.e. 73.3% and 53.6% respectively. Nurse Auxillary category had the highest proportion of individuals with poor knowledge on infant feeding options i.e. 77.3%. The difference was statistically significant. ($P< 0.01$)

A high proportion of respondents with higher education had moderate level of knowledge compared to those with secondary and primary education i.e. 66.7%, 47.4% and 44.7% respectively. Primary education cadre had higher proportion of individuals with poor level of knowledge on infant feeding options (55.3%).

A high proportion of respondents from health center had moderate knowledge on infant feeding options compared to those from other level i.e. 49.0% health center, 47.9% hospital and 44.5% dispensaries. Training status was found to influence level of knowledge on infant feeding with 55.6% of trained respondents having moderate knowledge compared to 45.2% untrained. ($P=0.48$)

Table 10: Explanatory factors of respondents' level of knowledge on infant feeding options

	Poor		Moderate		Good		Total	p-value
Cadre	No	%	No	%	No	%	No	
Medical Officer/ Assistant Medical Officer	3	20.0	11	73.3	1	6.6	15	
Clinical Officer/ Assistant Clinical Officer	12	50.0	12	50.0	0	0.0	24	
Nursing Officer/ Nurse Midwife	64	46.4	74	53.6	0	0.0	138	
Enrolled Trained Nurse	4	57.1	3	42.9	0	0.0	7	
MCH Aider	35	71.4	14	28.6	0	0.0	49	
Nurse Auxillaries	17	77.3	5	22.7	0	0.0	22	P<0.01
Level of education								
Primary education	63	55.3	51	44.7	0	0.0	114	
Secondary education	70	51.8	64	47.4	1	0.7	135	
Higher education	2	33.3	4	66.7	0	0.0	6	P=0.08
Level of health facility								
Hospital	49	52.1	45	47.9	0	0.0	94	
Health center	25	49.0	25	49.0	1	2.0	51	
Dispensary	61	55.5	49	44.5	0	0.0	110	P=0.34
Training on HIV and infant feeding								
Trained	16	44.4	20	55.6	0	0.0	36	
Not trained	119	54.3	99	45.2	1	0.5	219	P=0.48

RESPONDENTS SOURCE OF INFORMATION ON INFANT FEEDING OPTIONS

When the health workers were asked to mention their source of information on infant feeding options, almost two thirds (64.7%) of them said they got informed through the media, while 44.3% said on the job learning. (See table 11) High proportion of respondents from private facilities (33.9%) got informed while they were undergoing preservice training compared to those from government facilities (15.8%). A Lower proportion (19.3%) of respondents from private health facilities mentioned seminars as their source of information on infant feeding option compared to those government facilities (23.9%).

Table 11: Respondents' sources of information on infant feeding options in relation to ownership of health facility.

Source	Government N=146		Private N=109		Total N=255	
	No	%	No	%	No	%
Media	94	64.4	71	65.1	165	64.7
On the job learning	71	48.6	42	38.5	113	44.3
Books	41	28.1	40	36.7	81	31.8
Preservice trainings	23	15.8	37	33.9	60	23.5
Seminar	35	23.9	21	19.3	56	22.0

NB: Multiple responses

Availability of IEC materials on MTCT and infant feeding options for HIV positive mothers in the health facility

Out of the 255 health workers interviewed 24.7%(63) reported that their health facility had IEC materials and showed members of the research team brochures on MTCT of HIV while only 1.2% health workers reported their health facilities as having materials on infant feeding options for HIV positive mothers. A higher proportion of IEC materials on MTCT were found in government facilities compared to private health facilities i.e. 33.6% and 12.8% respectively. (See table 12). A high proportion of government and private health facilities had no materials on infant feeding options for HIV positive mothers i.e. 98.6% and 99.1% respectively.

Table 12: Availability of IEC materials on MTCT and infant feeding options for HIV positive mothers by facility ownership

IEC materials	Government n= 146		Private n=109		Total n=255	
IEC materials on MTCT	No	%	No	%	No	%
Available	49	33.6	14	12.8	63	24.7
Not available	97	66.4	95	87.2	192	75.3
IEC materials on infant feeding options						
Available	2	1.4	1	0.9	3	1.2
Not available	144	98.6	108	99.1	252	98.8

PROBLEMS FACED BY HEALTH WORKERS IN GIVING ADVICE ON INFANT FEEDING TO HIV POSITIVE MOTHERS

A total of 78 respondents reported that they gave advice on infant feeding options to HIV positive mothers. Only 45 respondents mentioned facing problems when giving this advice. Table 13 shows that the three most common problems mentioned by respondents were financial constraints of the mothers (46.6%) followed by stigma attached to HIV (33.3%) and inability of mothers to implement given advice (28.8%).

Lack of VCT services in the facility and lack of knowledge on infant feeding options were mentioned by 13.3% and 11.1% of the respondents respectively.

Table 13: Problems faced by health workers in giving advice to HIV positive mothers (n=45)

Problems	No	%
Financial constraints of the mothers	21	46.6
Stigma attached to HIV	15	33.3
Inability of the mothers to implement given advice	13	28.8
Lack of VCT	6	13.3
Lack of knowledge on infant feeding options	5	11.1
Husbands not supportive to HIV positive mothers	4	8.9
Heavy workload	1	2.2

NB: Multiple responses.

TRAINING OF HEALTH WORKERS ON HIV AND INFANT FEEDING OPTIONS FOR HIV POSITIVE MOTHERS

Table 14 shows that out of 255 health workers interviewed only 36 (14.1 %) were trained on HIV and infant feeding options for mothers who are HIV positive. A higher proportion of the trained respondents were from government health facilities 20.5% compared with 5.5% from the private health facilities. The results also showed that few respondents working in Pediatric wards were trained compared to those working at the MCH clinics i.e. 9.7% versus 16.3% respectively.

Table 14: Distribution of respondents by whether they received training on HIV and infant feeding by selected factors

	Trained		Not trained		Total
	No	%	No	%	No
Ownership of Health facility					
Government	30	20.5	116	79.5	146
Private	6	5.5	103	94.5	109
Level of health facility					
Hospital	13	13.8	81	86.2	94
Health center	8	15.7	43	84.3	51
Dispensary	15	13.6	95	86.4	110
Department					
Labor ward	7	10.9	57	89.1	64
MCH	26	16.3	134	83.7	160
Pediatric ward	3	9.7	28	90.3	31

CHAPTER 5

DISCUSSION

Knowledge of respondents on mother to child transmission of HIV

Results from the study showed that majority of the respondents were able to mention all the three modes whereby HIV can be transmitted from mother to child. The most common mentioned mode was transmission during breastfeeding. When respondent knowledge on modes of transmission is compared by ownership of health facility it was seen that there was no difference. Overall 71.8% respondents had moderate level of knowledge on MTCT, with a higher proportion from the government facilities having moderate knowledge compared to the private. The difference in level of knowledge of respondents from government and private health facilities could be explained by the fact that in government facilities IEC materials were more available compared to the private. These findings differ from those found in Botswana where it was established that both trained and untrained staff at facilities with PMTCT programme and also those without the programme had poor knowledge on HIV and MTCT (PMTCT Advisory Group, 2001). Similarly in South Africa, Chopra et al (2000) reported that care givers had poor knowledge about the risk of MTCT whereby 40% mentioned transmission during pregnancy, 27% during breastfeeding, 7% during delivery while 30% of the care givers believed that all HIV women who breastfeed transmit the virus to the infant. In Tanzania it was reported that counselors have inadequate knowledge of risks on MTCT. (de Paoli et al, 2002)

The differences in the findings could be explained by the fact that findings in Tanzania are a results of a study just concluded. That between 2002 when the two studies above were done and now there has been continuous uses of mass media to increase awareness of HIV/AIDS among health workers and the general population in Tanzania. Surveys carried out by NACP show that HIV/AIDS awareness in Tanzania is 98%. The concentration on promotive and preventive health care services education has also been an important element in increasing respective knowledge in the health care system. Furthermore, since year 2001 HIV/AIDS prevention and control activities have been a mandate of the Tanzania Prime Ministers office. This has given HIV/AIDS prevention activities the chance to reach wider sections of the population.

Knowledge of respondents on infant feeding options for HIV positive mothers

About a half (52.9%) of the respondents in this study had poor level of knowledge on infant feeding options. In this case also a slightly higher proportion of respondents from private health facilities had poorer knowledge compared to the government facilities i.e. 55.5% versus 51.4%.

The results also showed that the most common known breast milk option was exclusive breastfeeding for six months, while commercial infant formula was mentioned most as a replacement feeding option. Approximately 36% of respondents could not mention any of the breast milk options. Out of these a higher proportions was from private facilities.

Respondents' poor level of knowledge on infant feeding options could be due to inadequate training on HIV and infant feeding in pre service and in service training. This is more so with health workers in the private facilities. The majority of the respondents trained on HIV and infant feeding were from government facilities. This problem of poor knowledge on infant feeding is also attributable to lack of IEC materials on infant feeding options available for HIV positive mothers in the health facilities. Other reasons are that the health workers who were trained to be Trainer of Trainers on HIV and infant feeding were not able to do cascade training as assumed because of lack of resources. These findings are consistent with those of other studies done in Tanzania (de Paoli et al, 2002). In the latter study it is reported that counselors gave incorrect advice about early cessation and how to advice mothers to feed an infant after cessation. They also lacked knowledge on exclusive breastfeeding and its benefits. Some believed that the risk of HIV transmission through breastfeeding was greater than the risk of diarrhea or malnutrition. In South Africa (Chopra et al, 2000) found out that health workers had limited knowledge of optimal infant feeding and that as a result they advised all HIV positive mothers to use formula feeds regardless of risk or economic status of the woman resulting in uninformed choice.

In reality however, both in Tanzania and South Africa such an advice (formula feeding only for mothers who are HIV positive) will be difficult to implement for various reasons. These reasons include low incomes among the target groups. Formula feeds are

normally expensive and will not be available in rural areas where majority of the population live. Moreover scarcity of water in most areas (Only 40% of the population in Tanzania which receive clean water) will make it difficult for formula feeds to be prepared under hygienic conditions. This may lead to diarrhea and other gastro intestinal problems. For the rural areas therefore formula feeding is not practical. Therefore the majority of women so advised will not be able to follow it. Social acceptability may be another factor making it difficult to follow this advice. Socio cultural norms expect women to breastfeed their children. Those who do not breastfeed are stigmatized.

Explanatory factors of levels of knowledge

Explanatory factors of level of knowledge on MTCT

Level of knowledge on MTCT was clearly influenced by cadre as most of the higher cadres such as Medical Officers/Assistant Medical Officers had good level of knowledge on MTCT. The results also showed unusual association between cadre of the respondents and level of knowledge whereby 59.1% Nurse Auxiliaries had moderate level of knowledge, such a high percentage was not expected at their level of training. This difference could be due to the fact that for the past twenty years of the epidemic there has been increase in awareness through informal means of acquiring knowledge. In Tanzania such means include the mass media.

Level of knowledge on MTCT was also found to be dependent on level of education as it was found out that respondents (16.7%) with higher education had good level of knowledge compared to those with secondary education 8.9% and 3.5% primary education. This could be due to the fact that those with higher education have wider exposure to HIV/AIDS issues. They can read more widely and they have higher chances of participating in related seminars and workshops.

Although the differences were not statistically significant, respondents from health center and hospitals appear to have better knowledge than those in the dispensaries as it was seen that good level of knowledge was found in 13.7% of respondents from health facilities, 6.4% respondents from hospitals while only 3.6% of respondents from dispensaries had good level of knowledge on MTCT.

Although the difference was not statistically significant, training influenced level of knowledge as it was found out that 11.1% of trained respondents had good level of knowledge compared to 5.9% who were untrained.

Explanatory factors of *Level of knowledge on infant feeding*

In relation to education, a high proportion of respondents with higher education had moderate level of knowledge on infant feeding compared to those with secondary and primary education i.e. 66.7%, 47.4% and 44.7%. Higher proportion of respondents with

primary education level had poor level of knowledge on infant feeding options. This could be due to the fact that besides having more ordinary education the latter group normally receives more health care training. In this training they cover more topics related to health at a greater depth and they have a longer and varied field exposure. This in essence could explain the depth of their knowledge in this area.

Level of knowledge on infant feeding appears to be dependent on cadre. The highest proportion of respondents with moderate level of knowledge on infant feeding was found in Medical Officers/Assistant Medical Officers (73.3%) followed by Nursing Officers/Nurse Midwives (53.6%). A high proportion of Nursing Officers/ Nurse midwives were seen to have moderate level of knowledge on infant feeding options compared to Clinical Officers/Assistant Clinical Officers i.e. 53.6% versus 50.0%. This difference is attributable to the fact that Nurse Officers/Nurse Midwifes work closely with the mothers so they gain in experience and knowledge. Their training is more on maternal child health care as opposed to that of Clinical Officers.

A higher proportion of respondents from health center had moderate level of knowledge compared to respondents from the other levels, this could be due to the fact that among the trained respondents a higher proportion was from health centers compared to other levels i.e.15.7% health centers, 13.8% hospitals and 13.6% dispensaries.

Training status influence level of knowledge on infant feeding as 55.6% of trained respondents had moderate level of knowledge compared to those untrained (45.2%). This shows that training including inservice training influence knowledge. This is a basis for emphasis on retraining of health workers so as to increase knowledge and provision of accurate information to the HIV positive mothers.

These findings defer from those found in Botswana which showed that training did not influence knowledge on HIV and MTCT as it was found out that knowledge on HIV and MTCT among trained and untrained health workers at both PMTCT programme sites and non programme sites (PMTCT Advisory Group, 2001).

Sources of information on infant feeding options for HIV positive mothers

Results from our study showed that 64.7% of the health workers got information on infant feeding options for HIV positive mothers from the media such as TV and radio. 44.3% got information through on the job learning. A higher proportion of respondents from private facilities (33.9%) got informed while they were undergoing preservice training compared to those from the government health facilities (15.8%). A lower proportion (19.3%) of respondents from private health facilities mentioned seminars as their source of information on infant feeding options compared to those in the government. This is due to the fact that health workers in the government have higher chances of attending seminars. When going around the health facilities we attempted to find out if there were any information education and communication materials on

mother to child transmission of HIV/AIDS and its prevention. We also looked for materials on feeding of infants who are born to HIV positive mothers that would help in increasing awareness and knowledge of health workers and community as a whole. 24.7% of respondents said the health facility had materials such as brochures on MTCT of HIV, while only 1.2% mentioned having materials on infant feeding options for HIV positive mothers. A higher proportion (33.6%) of IEC materials on MTCT were found in the government health facilities compared to private facilities (12.8%). All the government and private health facilities lacked materials on infant feeding option available for HIV positive mothers. There is inadequacy of IEC materials despite the fact that the epidemic of HIV/AIDS has existed more than twenty years. This could be due to denial that HIV/AIDS is a big problem and also due to inadequacy of resources as production and dissemination of materials is very costly. Other researches have identified similar aspects of lack of information and education materials in Tanzania. For example (Swartzendruber et al, 2002) found low awareness on PMTCT and lack of IEC materials such as posters, pamphlets and other education aids. The same was seen in Uganda whereby women and staff lacked IEC materials to support counseling about infant feeding (Matovu et al, 2002).

Problems faced by health workers when giving advice

The study results showed that out of the 255 respondents only 78 were disseminating information by giving advice on issues concerning MTCT of HIV/AIDS and infant

feeding options available for mothers who are HIV positive. When asked about the constraints they faced, 46.6% mentioned financial situation of the mothers as a hindrance to choosing infant feeding options, 33.3% mentioned stigma attached to HIV as hindering the mothers to follow advice they are given. Furthermore, 28.8% mentioned compliance (inability to implement given advice) of their clients, 13.3% mentioned lack of VCT services in the health facilities made it difficult for them to identify HIV infected mothers. Lack of knowledge on infant feeding options on health workers side as a hindrance on giving proper information to HIV positive mothers, poor husband/partners involvement and heavy workload made health workers not have enough time to talk to the women were also mentioned as problems.

These findings are similar to those found in a study done by (Rutenberg et al, 2002) whereby it was found out that the following factors hamper health worker ability to provide balanced information on feeding options. These factors include understaffing, inadequate supplies, fear of disclosure of status among the mothers, stigmatization and misconceptions and confusion about exclusive breastfeeding and transmission.

Training on HIV and infant feeding

From the study results it showed that majority of the health workers 85.9% were not trained on HIV and infant feeding options as only 36 respondents out of 255 were trained. A higher proportion of those trained were from government health facilities

(20.5%) compared to private (5.5%). The results also showed that lower proportion of respondents from Pediatric ward were trained compared to other departments i.e. 9.7% from Pediatric ward, 10.9% from Labor ward and 16.3% from MCH clinics respectfully. The advice giving by health workers who are not trained might lead to provision of incorrect advice which might lead to non informed choice of the mothers on infant feeding options. At times this situation is an avoidable because the public health sector in Tanzania has serious staffing problem. According to the latest health sector review (April 2005) the health care system establishment is 70% deficient. To date some dispensaries are headed by assistant clinical officers (a phased out cadre) or nurses.

Training is done mostly to the health workers working in the government health facilities compared to the private; this shows that the private public partnership in Tanzania is not comprehensive as yet. Other studies in Tanzania showed similar results, namely no training plans or training strategies, inadequately trained health workers on infant feeding options (Swartzendruber et al, 2002). In Swaziland a study done to identify information gaps among health care providers showed health workers had little training on infant feeding (Vilakati and Shongwe, 2001).

Perceived problems facing HIV positive mothers when choosing feeding options

Health workers were asked on perceived problems facing HIV positive mothers when choosing infant feeding options. The study results showed that, 37.6% of the health

workers mentioned economic situation of the women as a hindrance. This problem made them choose the breastmilk options, choice of replacement feeding was not done due to poverty and lack of financial support .Not breastfeeding was seen as an indication of being HIV positive thus leading to stigmatization. Moreover the choice to breastfeed or not to, is not exclusively that of the respective mother, her inlaws and other relatives often influence her decision. The extended family has also a role to play in most of the conduct of the woman after delivery. 24.7% of health workers mentioned stigmatization as a problem that also made women opt for exclusive breastfeeding or decide to do normal breastfeeding regardless of the risks involved for the fear of being abandoned, ignored, isolated and openly disgraced. Other reasons mentioned include breast engorgement, psychological effect that women feared the loss of bond with their infants if not breastfeeding. Other respondents mentioned two or three of the above problems. (Rutenberg et al, 2002) identified social class, education, social pressure and poverty as influencing choice of feeding option.

Interview with policy makers

Indepth interviews were conducted with key informants in the health sector. Key informants were purposively selected on the basis of their in depth understanding on issues of policy in relation to HIV and infant feeding. Interviews also looked at training of health care providers, existence of policy on HIV and infant feeding and also dissemination of information to the targeted population. The information received was

used to complement information obtained in questionnaires and further explain study results.

The interviewees were: Acting pMTCT coordinator from the Ministry of Health (MOH), Director of Nutrition and Education at Tanzania Food and Nutrition Center (TFNC), Director of The Center for Counseling, Nutrition and Health Care (COUNSENUTH) and pMTCT supervisor from Pastoral Activities and Services to people with HIV/AIDS Dar es Salaam Archdiocese (PASADA).

Existence of written National Policy on infant feeding and HIV

All the four respondents said that there was no written policy on HIV and infant feeding but confirmed that National guidelines for prevention of Mother to Child transmission of HIV have been developed. National HIV/AIDS policy exists in which there is a chapter on prevention of Mother to Child transmission of HIV. The policy talks about modes of transmission of MTCT and its prevention. It also puts emphasis on voluntary counseling and testing of pregnant women and their husbands or partners to be promoted at all levels. The National policy did not include the infant feeding options to be used (National policy on HIV/AIDS, 2001).

Inclusion of HIV and infant feeding in Pre and Inservice training curricula

On the issue of inclusion of HIV and infant feeding in pre service and in service training curricula of health care providers, three of the respondents from (TFNC, COUNSENUTH, and MOH) said that it has not been done but they are planning to do so in the future. Respondent from PASADA said they did inservice training to nurses from their 8 dispensaries, home based care nurses and counselors. Non inclusion of HIV and infant feeding in preservice and in service training curriculum of health care providers leads to lack of knowledge of these issues to health workers who have not undergone special training on HIV and infant feeding. This further elaborates the results of the study that showed existence of poor knowledge among 52.9% of the study respondents.

Integration of HIV and infant feeding in VCT, PMTCT and in IMCI services

The respondents were aware of integration of HIV and Infant feeding in PMTCT and IMCI only, they were not sure if infant feeding is integrated in VCT services. Respondent from PASADA said that: '*I am aware that HIV and infant feeding is integrated in PMTCT and IMCI activities but I am not aware of it being integrated into VCT services'.*

VCT and PMTCT services

Regarding whether VCT and PMTCT services are enough to offer counseling services to pregnant mothers, respondent from TFNC said she was not sure of that, two

respondents said the VCT and PMTCT services were not enough and that many health facilities lack those services. The Acting PMTCT coordinator said PMTCT sites are not enough but they have plans to scale up to all health facilities in Tanzania. At the moment PMTCT services are available in all hospitals in 21 Regions, 84 District hospitals and 227 health center and dispensaries in Tanzania. These services are inadequate in comparison to the health facilities existing in Tanzania.

Training and retraining of health care providers

Training of health workers on HIV and infant feeding has been done. According to the PMTCT coordinator 476 health workers have been trained so far among which 48 were training of trainers (TOT) at regional level the rest were health workers in reproductive health services. The Center for Counseling, Nutrition and Health Care (COUNSENUTH) has trained health workers at Regional and District hospitals in Kagera, Morogoro, Tanga, and Kilimanjaro. Tanzania Food and Nutrition Center has also trained TOT and health care providers in Dar es Salaam, Kisarawe, Kibaha, Bagamoyo, Mkuranga, Iringa, Mbeya and Arusha. The number of the trained health workers was not available. PASADA trained 15 nurses in their dispensaries, 8 home based care nurses and 10 counselors.

The acting PMTCT coordinator said that they only do retraining when there is a change in policy while the rest said inadequacy of funds restricts them from conducting

retraining. The trainings conducted are inadequate, as there are majority of health workers who have not yet undergone training and are in need to be trained. Those trained need to be retrained so as to be updated in the current issues on HIV and infant feeding.

Guidelines and training manual

All the respondents said guidelines and training manuals on HIV and infant feeding exist and they were prepared by the Ministry of Health, but are given to health care providers who have undergone training. The Acting PMTCT coordinator said that IEC materials on MTCT of HIV and infant feeding are available but currently distributed to areas where there are PMTCT sites only. The Tanzania Food and Nutrition Center has developed IEC materials for the community and specific for the mothers but due to lack of funds printing and distribution has not been done yet. This shows that there is gross in adequacy of IEC materials and that various actors are needed in the development and distribution of IEC materials to a larger audience.

Efforts to empower community with knowledge and information on HIV and infant feeding

Efforts done to empower communities with knowledge, information and skills on HIV and infant feeding so as to overcome stigma associated with infant feeding include training of extension workers in the communities (agriculture and community development people) and also community volunteers. Trainings are also conducted to

home based care providers and community support groups who support mothers and link them with health facility. Sensitization meetings carried out with the local Government leaders, Traditional birth attendants, Traditional healers and community health educators on PMTCT and use of ARVs. Pre marriage seminars are conducted, issues on voluntary counseling, stigmatization and prevention of MTCT of HIV in which issues of infant feeding are discussed.

At national level they had done sensitization trainings on components of PMTCT to some members of Regional health management teams (RHMT) and Council health management teams (CHMT). Sensitization was done so that RHMT and CHMT would supervise TOT in the Regions and Districts and also help in the sensitization of community leaders. Community sensitization was done in areas where there are PMTCT sites and the site catchment areas.

Dissemination of information to the target population

Dissemination of information on various issues concerning HIV, MTCT and infant feeding to the target population was done through the use of IEC materials such as posters, brochures and leaflets. Health workers and counselors disseminate IEC to pregnant mothers. There were also drama groups that talk about HIV and Infant feeding in the outpatient department so as to attract male partners and thus make them involved

in the testing and choosing of the feeding options. The drama groups also performed in the community so as to raise awareness.

From the key informants interview it was found out that there is no written National Policy on HIV and infant feeding; HIV and infant feeding is not included in pre service and in service training curricula; HIV and infant feeding is integrated in IMCI and PMTCT services and that PMTCT and VCT services are inadequate in comparison to the health facilities existing in Tanzania. Training conducted is inadequate, as the majority of health workers have no yet undergone training despite existence of need to do so. There is also lack of IEC materials on HIV and infant feeding due to lack of funds for printing and distribution.

CHAPTER 6

6.1 CONCLUSION

1. Low knowledge levels on infant feeding options in both public and private health facility workers.

2. Knowledge on MTCT of HIV/AIDS is moderate.

3. Lower cadre staff have less knowledge levels. Level of education is closely associated with knowledge level.

4. Mass media and on the job training are the most important sources of information on infant feeding options.

5. Financial constraints, stigma and inability to implement choices by HIV positive women are the most encountered problems while advising HIV positive mothers.

6. Training of health workers on HIV and infant feeding is inadequate as only 14.1% out of the 255 health workers were trained. Respondents 20.5% from government health facilities were trained compared to private (5.5%). Also, majority of those trained were from MCH clinics. A slightly higher proportion of respondents trained

were from health centers. It was also established that training on HIV and infant feeding is not included in preservice and in service training curricula of health workers.

7. There are inadequate PMTCT and VCT services in the health facilities.

8. Two more problems were identified at the national level. These include:

   1) Lack of clear policy on HIV and infant feeding

   2) Lack of clear strategies to decrease stigmatization of those affected by HIV/AIDS.

6.2 RECOMMENDATIONS

1. The ministry of health and relevant non governmental organizations should organize seminars and trainings on HIV and infant feeding for health workers in both public and private health facilities in order to increase their level of knowledge on MTCT, HIV and infant feeding options.

2. It is recommended that efforts be invested in educating lower cadre staff so as to improve their general knowledge.

3. There is need to continue promoting use of mass media (radio, newspapers, brochures and leaflets) in disseminating information on infant feeding options in both public and private health facilities.

4. Relevant authorities e.g. MOH, NGOs and Institutions should organize public education campaigns and provide education materials that address MTCT, infant feeding, stigma and discrimination for community use.

5. HIV and infant feeding should be integrated into pre service medical and nursing curricula so as to have competent health care providers with knowledge to impart to their clients.

6. The government should formulate a policy on HIV and infant feeding so as to provide guidance to the different stakeholders involved in the field of infant and young child nutrition.

7. There is need to expand the existing services of PMTCT and VCT sites to areas where they are not available.

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APPENDICES

APPENDIX 1: QUESTIONNAIRE (ENGLISH VERSION)

QUESTIONNAIRE ON KNOWLEDGE OF HEALTH WORKERS ON MOTHER TO CHILD TRANSMISSION OF HIV/AIDS AND INFANT FEEDING OPTIONS FOR HIV POSITIVE MOTHERS

QUESTIONNAIRE NUMBER

☐☐☐☐

Name of the Interviewer_____

Date _____/_____/_____

IDENTIFICATION:

District_____

Division_____

Ward_____

Street_____

Name of the Health Facility_____

Type of the Health Facility

1. Hospital
2. Health Center
3. Dispensary

Ownership of the Health Facility

1. Government
2. Private