A STUDY ON BREAST ABSCESSES AMONG BREASTFEEDING MOTHERS

BY

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A dissertation submitted to the University of Zambia in partial fulfillment of the requirements of the degree of Master of Public Health (MPH)

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DECLARATION

I hereby declare that to the best of my knowledge the work presented in this study, for the Master in Public Health has not been presented either wholly or in part for any other Master in Public Health Degree and is not being currently submitted for any other degree.

Signed:.....M.K. Chuntu..... Date:.....July 22nd, 2003.....

Student

Signed:..... Date:.....22/07/03.....

Supervising Lecturer

STATEMENT

I hereby certify that this work presented for the degree of Master of Public Health, is in all entirely the results of my own independent and laborious investigations. The various sources to which I am indebted are gratefully acknowledged in the text and in the references.

Signed:.....M.K. Chuntu.....

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APPROVAL

This dissertation of Mwate Kathleen Nampemba Chintu is approved in partial fulfillment of the requirements for the award of the degree in Master of Public Health by the University of Zambia.

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DEDICATION

This dissertation is dedicated to my husband, our children, breastfeeding mothers and their infants.

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ABSTRACT

It has been observed that breast abscesses are a common surgical condition at the University Teaching Hospital Female Casualty Ward. A pilot study on common breast problems in the female casualty records, covering the period of March 1997 to March 1998 showed that 720 breast abscess were common among breastfeeding mothers. Therefore, the study attempted to document factors contributing to development of breast abscesses among breastfeeding mothers admitted at the University Teaching Hospital Female Casualty Ward.

A cross section descriptive study design was used on 112-study population. Demographic data included socio-economic status, obstetrical history, preparation for breastfeeding during pregnancy, management of breastfeeding following child birth, maternal and infant health status prior to development of the breast abscess and laboratory investigations on culture and sensitivity, the status for HIV and anaemia.

The findings demonstrated that majority of mothers were first time (29.3%) or second time (24.9%) mothers with ages ranging between 15 – 24 (62 %), no education or very low literacy levels (71 %) residing in crowded and densely populated areas (76.8%) and poor income below poverty line (86.7%). Breast abscess were found to be common among mothers with younger infants in the first 12 weeks of postnatal period (72.4 %).

Appropriate breastfeeding education and breastfeeding support following childbirth were found to be grossly deficient in 94.6% of the mothers. Staphyloccocal aureus infection was found to be responsible for 94.6% of the organisms isolated. In this study 64.3% of the study population was HIV sero-positive. Anaemia was found in 44.6% of women presenting with abscesses.

With regard to HIV infection, findings bear very important implications on the general mothers' health whose HIV sero status is unknown. In the context of Mother-to-Child transmission (MTCT) of HIV during pregnancy, labor, delivery and post nataly through breastfeeding, one of the strong recommendations is to urgently integrate MTCT into all Baby Friendly Hospital Initiative (BFHI) activities and intensify appropriate breastfeeding education and support to all mothers following child birth in order to prevent unnecessary breast conditions in all breastfeeding mothers.

The factors contributing to the development of breast abscess were noted to be socio-economic status, age, parity, HIV and nutritional status. Study findings on the lack of appropriate breastfeeding education and support following childbirth have an impact on factors contributing to development of breast abscesses.

ACRONYMS

AIDS	-	Acquired Immune Deficiency Syndrome
ANC	-	Antenatal Care
ARI	-	Acute Respiratory Infections
BFHI	-	Baby Friendly Hospital Initiative
BMS	-	Breast Milk Substitute
CBoH	-	Central Board of Health
CSO	-	Central Statistics Office
D F	-	Degree of Freedom
DHMT	-	District Health Management Team/Board
E B F	-	Exclusive Breastfeeding
F P	-	Family Planning
G R Z	-	Government Republic of Zambia
H B	-	Heamoglobin
H I V	-	Human Immuno Deficiency Syndrom
L AM	-	Lactation Amenorrhoea
M C H	-	Maternal and Child Health
M M R	-	Maternal Mortality Rate
M O H	-	Ministry of Health
M T C T	-	Mother-to-Child-Transmission
P I D	-	Pelvic Infammatory Disease
PLWHA	-	People living with HIV/AIDS
P P H	-	Post Partum Heamorrhage
S D	-	Standard Deviation
S V D	-	Spontaneous Vertex Delivery

TBA	-	Traditional Birth Attendant
UNICEF	-	United Nations Children's Fund
UNAIDS	-	United Nations for Prevention of HIV Programme
UTH	-	University Teaching Hospital
WHA	-	World health Assembly
WHO	-	World Health Organization
ZDHS	-	Zambia Demographic and Health Survey
ZDV	-	Zidovudine

APTER I

INTRODUCTION

1.1. BACKGROUND INFORMATION

The study examines factors likely to contribute to development of breast abscesses among breastfeeding mothers admitted at the female surgical casualty, University Teaching Hospital (UTH) in Lusaka, Zambia. It has been observed that breast abscesses, particularly among breast-feeding mothers are common surgical condition presenting at the female casualty, UTH.

Breast abscesses have been noted to occur frequently in lactating women and occasionally in non-lactating women. Jonsson et al in their study of 100 women found that 68 abscesses occurred during lactation and 32 occurred in non-lactating women [17]. The cause of infection may result from pathogenic organism of internal and external factors influencing the health of lactating women.

Following childbirth, it is possible that some maternal factors could contribute to the development of breast abscesses among breastfeeding mothers. Maternal factors could be associated with inappropriate management of breastfeeding or with maternal health and socio-economic status. Those associated with inappropriate management of breastfeeding among others include cracked/fissured or sore nipples which provide entry to bacteria. Delay in initiation of breast-feeding leads to breast engorgement. Unresolved breast engorgement or blocked duct in which milk stagnates creates a medium for bacterial multiplication leading to mastitis and if un attended to ends up into a breast abscess.

Mothers commonly experience these breast-feeding problems during the first few weeks of postnatal period. While those associated with maternal health and socio-economic factors are stress/fatigue, nutritional status, and human immuno deficiency virus (HIV) infection. Mothers falling into one or a combination of those factors are predisposed to development of breast abscess during lactation.

According to WHO publication on Mastitis, maternal factors associated with development of breast abscess are prenatal maternal factors. These include anatomical variations of breast and nipples such as ductal abnormalities or grossly inverted nipples, which frequently harbor bacteria [45]. The bacteria can easily be inoculated in the lactiferous sinuses at the time of initiating breastfeeding resulting in breast infection ending up into an abscess. Macromostatia, the breast engorgement from lacto genesis process that occurs during pregnancy as a result of physiological response to hormonal changes in preparation for lactation may result in milk stasis that eventually becomes an abscess.

Besides maternal factors, are infant factors that contribute to the development of breast abscesses among breastfeeding mothers. These include staphylococcal aureus of the nasopharynx that the baby acquires a few days following birth. These organisms are inoculated into the mother's nipple during breastfeeding. Early supplementation of non-human milk has been associated with development of breast abscess among mothers of infants who are not exclusively breast-fed. Infants inoculate into mother's nipple non-human substances from their mouths. The substances may block the nipple sinus or infect the nipple predisposing the lactating breast to infection. During teething process infants may bite their mother's nipple

when breastfeeding creating an open skin in which bacteria is easily inoculated into the mother's nipple leading to infection and formation of a breast abscess.

Development of breast abscesses among breastfeeding mothers should be of a maternal and child health concern particularly that breastfeeding is such a process that is intimately inter-linked with maternal/health and child survival. In developing countries like Zambia where breastfeeding is the cultural norm for child's source of nutrition, care and child spacing practice mother's ill health especially regarding breast problems poses serious implications to an infant's health and survival.

Breast-feeding saves about six million lives of infants alone and has the potential to save an additional one to two million lives [44].It is now universally acknowledged that benefits of breastfeeding to both mother and child are well documented. These include nutritional, immunological, reduction of morbidity of diseases such as diarrhoeal, acute respiratory infections (ARI) and greatly contributes to positive psycho social effects on an infant. While for the mother benefits of exclusive breastfeeding lowers risks of post-partum heamorrhage (PPH), shortens the puerperium period reducing chances of pelivic infamatory disease (PID) and reduces chances of anaemia. Other benefits include lowered risks of ovarian cancer as well as reduced fertility and all the benefits that go with child spacing [27].

In the light of contribution of breast-feeding to safe motherhood and child survival as well as based on observation on the global decline in breastfeeding, Baby Friendly Hospital Initiative (BFHI) was launched in 1990. This initiative, based on WHO/UNICEF joint statement of 1989 ten steps to protecting promoting and supporting breastfeeding was implemented by the member states of the World Health

Assembly (WHA) in the same year. The aim of the initiative was to transform health care facilities into baby friendly environment by implementing the ten steps to successful breastfeeding and fully implement the International Code of Marketing of Breast Milk Substitutes (BMS) to regulate its use in use maternity hospitals and communities. The ten steps to successful breast-feeding are set as a yardstick to measure standards of maternity care routine practices, hospitals and community support to baby/mother friendly environment that support breast-feeding. The purpose of BFHI activities are to contribute to the reduction of common preventable maternal and child health problems such as postpartum heamorrhage (PPH), anaemia, breast conditions and prevention of early return to fertility on the mother's part. While for the infant and young child, is to prevent common child-hood preventable health problems resulting from inappropriate infant feeding practices.

Zambia being a member of WHA adopted and implemented BFHI activities in 1992. Since its implementation, 47 health facilities including UTH and the 10 maternity facilities in Lusaka Urban attained a BFHI status. In spite of the implementation of BFHI in maternity and MCH units, it has been observed that health staff in health facilities with BFHI status does not give attention to breastfeeding practices as outlined in the ten steps. According to NFNC/UNICEF 1997 evaluation report of BFHI activities in Zambia, the most common breastfeeding problems experienced by mothers during post natal period were found to be cracked/sore nipples, breast engorgement, mastitis and breast abscesses. Health Care Staff in facilities with BFHI status were not providing services related to management of appropriate breast-feeding skills for mothers in the MCH units [33].

Currently the scenario on the advent of HIV and mother to child transmission (MTCT) through breast-feeding has greatly threatened the implementation of BFHI.

1.2. PROBLEM STATEMENT

Incidence

It has been observed that breast abscesses are a common surgical condition at the University Teaching Hospital (UTH) Female Casualty Ward. A pilot study on common breast problems from UTH Female Casualty records, covering a period of March 1997 to March 1998 showed that an average of 720 breast abscesses were among breast-feeding mothers who came for consultation and treatment at the UTH. This number of breast abscesses constitutes almost 7% of all cases seen in that ward at a rate of 2-3 cases per day. In the second quarter of 1998, the rate increased from three to four (3-4) cases per day [41]. In public health practices, any condition that constitutes more than one percent (1%) of total health problem is defined as a public health problem.

Lusaka's urban projected population constitutes about 260,395 (22%) of women in childbearing age. The UTH and maternity facilities have an average of 25,000 to 30,000 deliveries per year [41, 24]. This implies that women in childbearing age and mothers are at risk of developing breast abscesses in the process of childbirth. Like wise their infants will also be exposed to consequences of their mothers' health.

Under Reporting

Under reporting of breast abscesses among breastfeeding mothers gives a false picture of the magnitude of the problem. Although the current practice for post-natal follow up at 1 week and at 6 weeks exist, it is not known to what extent breast-feeding problems are assessed as an important component of postnatal check up. It has been observed that mothers presenting with problems related to postpartum in nature

including breast-feeding problems report to Out Patient Department (OPD) for services instead of the Maternal and Child Health (MCH) service unit. This gives a false picture that mothers do not develop such problems during postpartum period. Besides UTH and the MCH services there are other health services other than the government clinics and the UTH such as private surgeries or traditional health services where breast-feeding mothers presenting with breast abscesses could have gone for services. Therefore, it is possible that the numbers of 1,700 breast abscesses referred to UTH in 1992 – 1993 and the 240-300 cases reviewed from the 2 clinics could have been higher.

Decline in BFHI activities

Following the implementation of BFHI in Zambia in 1992, UTH and 10 maternity clinics were amongst the health facilities offering BFHI services in Lusaka. In addition the involvement of the District Health Management Team (DHMT) and formation of breastfeeding mother support groups in Lusaka Urban complemented the BFHI services in the community. This presumably led to the decline in the record of breast abscesses referred to UTH from 1,700 to 720 for the period from 1993 to 1997, a 4 years period. The decline was by 57.6% similarly a decline was also observed in the 2 of the 10 clinics namely Chawama and Matero clinics where the records showed 10 to 5 cases per month a reduction of 50%. However, in spite of this remarkable reduction, the incident of breast abscesses of 720 for the period 1997-1998 amongst breast-feeding mothers is still unacceptably high [24].

Breast-feeding mothers presenting with breast abscesses in early post-natal period are likely to be exposed to some of complications of puerperium. These include puerperal sepsis, secondary post-partum heamorrhage, pelvic inflammatory disease (PID) and mastitis. The secondary post-partum hemorrhage may take place from 24th hour up to the 6th week of the puerperium but commonly occurs between tenth 10th and 14 days post partum. This is because in the presence of breast problems leading to breast abscesses there is no demand and effective suckling of the baby on the breast. The reciprocative process in effective and demand breastfeeding contributes to prevention of complications following childbirth. In Zambia maternal mortality is six hundred and forty per hundred thousand (640/100,000) deliveries. The leading causes of maternal mortality include PPH (24%) Malaria (14%) sepsis (12.5%) AIDS related 12.5% [29].

Among the practices of breastfeeding that contributes to reduction of the risks of PPH, PID, and mastitis is the early initiation of breast-feeding, that is within 30 minutes of birth and thereafter on demand and frequent feeding. The act of breastfeeding stimulates the let done reflex or oxytocin reflex each time the mother breastfeeds. This contributes to quick involution of the uterus and shortens the puerperium. All retained products of conception are expelled, period of lochia flow shortened thereby limiting chances of developing puerperal infections of the uterus. At the same time frequent and demand feeding prevents milk stasis that is likely to lead to breast engorgement and eventually mastitis and breast abscess. It is possible that mothers presenting with breast abscess could have experienced cracked/sore nipples, breast engorgement and mastitis that made breastfeeding difficult and in effective at the same time it is possible that breastfeeding could have stopped

temporarily. Expressing breast milk does not effectively stimulate oxytocin reflex hence these mothers risk developing puerperal complications in the absence of effective breastfeeding in early post partum period [43, 44].

Risk of early return to fertility

Mothers who present with breast abscess within the first six months of childbirth are exposed to risks of early return of their fertility. Studies have showed Lactation Ammernorrhoea method (LAM) in which exclusive breast-feeding is the key component of the method, is 98% effective in the first six months post partum. Exclusive breastfeeding means giving the baby nothing other than breast milk including water unless medically indicated. In the LAM practice an infant must be less than 6 months of age, be on exclusive breast-feeding and the mother must have no menses [9]. Exclusive breastfeeding including breast night feeds is crucial in raising prolactin levels which inhibits ovulation. The increased prolactin levels inhibit ovulation. Mothers with breast abscess introduce other feeds to the baby to supplement the breast milk in the process of management of breast abscess due to less breast suckling stimulation, less prolactin is produced leading to the stimulation of ovulation and subsequent return to fertility. Both temporary and complete stopping of breastfeeding increases a risk of early return to fertility and a mother is likely to fall pregnant during this period with a young baby.

The decline of BFHI correspondingly affected the mother support groups which supported exclusive breastfeeding as part of family planning method to the woman in the community.

Breast Abscess Serve as Indicators of Poor Maternal Health Status

The manifestation of breast abscesses among breastfeeding mothers could be an indicator of poor general maternal health. General ill health, poor nutrition status, stress or fatigue resulting from the process of childbirth, predisposes breastfeeding mothers to development of breast abscess [5]. Morbidity related to hearmorrhage, sepsis, anaemia, eclampsia, malaria and HIV are the major causes of maternal mortality in Zambia. These greatly contribute to maternal fatigue, stress and lowered resistance to infection. In appropriate management of breastfeeding under such poor health status easily result in opportunistic injury such as cracked/sore nipples resulting in avoidable complications like breast abscesses.

Increased Risk of Mother to Child transmission of HIV (MTCT) through Breast-feeding.

Mother to child transmission (MTCT) of HIV during pregnancy, labor and delivery and through breastfeeding, postnatal has been well documented [16]. MTCT of HIV through breast milk is estimated at 14% for HIV positive mothers who are already infected before or during pregnancy. However, if the mother acquires the infection during the breastfeeding period the risk of transmission is doubled to 28.9%. Additional risk factors on the mother's part include AIDS related manifestation status new HIV infection, breast conditions such as cracked/fissured nipples, breast engorgement, mastitis candida infections and breast abscesses for HIV positive mother. Mixed feeding has also been shown to increased risk of MTCT [3. 18, 34]. Breastfeeding mothers presenting with breast abscesses have a higher exposure of transmitting human immuno deficiency virus (HIV) infection to their infants through breastfeeding.

The HIV prevalence in the general population is estimated at almost 20%.

The first major source of HIV infection in Zambia is through hetero sexual intercourse during which breastfeeding mothers are likely to be infected and subsequently infect their infants [28]. The second major source of HIV infection is through mother-to-child transmission (MTCT) of which is estimated at forty percent (40%) in the ante-natal population. Both in general and ante-natal population there is only about 7% is of known HIV status. Therefore, in the absence of BFHI for appropriate lactation management in maternity, and MCH units, as well as community support, more mothers are likely to develop breast problems which if they are HIV infected will increase chances of MTCT to their infants

Furthermore, lack of exclusive breastfeeding increases the risk of MTCT of HIV through breastfeeding. Coutsoudis and her colleagues in their study on influence of infant-feeding pattern on early MTCT of HIV-I in Durban, South Africa found that the percentage of infants infected with HIV through MTCT was higher among infants who received mixed feeding than those who were fed on exclusive formula or breast milk [3]. In fact exclusively breast fed infants still had a slightly lower rate of transmission than on those fed on exclusive infant formula milk. Studies on breast milk have showed that breast milk has properties that coat the gastro intestinal track of infants to protect the lining of the mucosa. In the absence of breast milk feeding the mucosa gets eroded away by other feeds that do not have such protective properties [9].

Increased Morbidity and Mortality among not breastfed Infants

As stated earlier, breastfeeding is interlinked with child survival growth, development and psychosocial well being of an infant. Development of breast abscesses among breastfeeding mothers particularly within the first six months post delivery interrupts the exclusive breast feeding practice in the course of mothers' development and management of breast abscesses. During this period the infant is fed on breast milk substitutes as a replacement food in place of breast milk. This defeats the purpose of benefits of exclusive breast-feeding in the first six months of an infant's life. WHO states that infants who are not exclusively breastfed in the first six months of life are fourteen times more likely to die from diarrhoea diseases, three times more likely to die from respiratory infections and five times otitis media. Even a temporary interruption to breastfeeding is a high risk to child survival. In developing countries like Zambia where there is poor sanitation and inadequate clean water supply, making a clean formula feed is virtually unpractical. In addition the poverty situation may not allow affordability to buy appropriate and adequate infant formula supplies. Therefore in the presence of breast abscesses among breastfeeding mothers correspondingly interrupts exclusive breastfeeding that subsequently leads to increased morbidity and mortality from inappropriate infant feeding practices

Breast Abscesses Create Unnecessary Costs

Other problems related to mothers presenting with breast abscesses are socio-economic factors in Zambia. Among the factors is firstly, the unnecessary health costs to health institutions and families involve in providing service to and caring for mothers presenting with breast abscesses. Most breast abscesses are avoidable. Their occurrence creates unnecessary costs to health personnel, drugs, bed occupancy,

theatre procedures and time and resources spent on attending to avoidable health problems. Like wise mothers suffer from physical pain, inability to care for their infants and financial constraints for health costs. Similarly their infants who are supposed to be exclusively breastfed suffer consequences of being fed on breast milk substitutes that lead to high infant morbidity and mortality creating unnecessary medical and social costs.

Preparation for and management of breastfeeding is a neglected component of conception, partution and lactation

Currently maternity MCH/FP services do not address breastfeeding issues adequately during antenatal care, labor and delivery, postnatal and lactation period. In research area, studies on breast problems have taken the aspects of breast cancer from oncological and surgical point of view and not as part of the reproductive health and safe motherhood. During antenatal care, service provision for breast examination has not been given an attention as part of conception and partition process. Preparation for and management of breast-feeding and identification of at risk mothers for breastfeeding has been neglected. According to Myles [31] among the aims of antenatal care in midwifery practice include:-

To prepare the women for labour, lactation and subsequent care of her child from physical, psychological, social and educational point of view.

To detect early and treat appropriately "high risk" conditions, medical and obstetrical, that would endanger or impair the life of mother and child.

Preparing women for lactation and subsequent care of her child includes providing information education and communication skills of breastfeeding and related child

birth issues. Following childbirth mothers need to be helped, shown how to breastfeed and given the necessary support to prevent breast problems.

According to the Zambia Demographic and Health Survey 1996 antenatal coverage is as high as 95.6% with an average attendance of 4 visits per antenatal mother. These numbers of visits provide opportunity for health workers to identify mothers at risk for obstetrical and neonatal management including breastfeeding. These opportunities afford chances for health education, counseling and support in preparation for breastfeeding to all mothers but with extra support for those at risk. One of the aims of health education is to create awareness to individuals so that they can recognize and take measures to prevent identified problems including those related to breastfeeding. With the average number of 4 visits per mother one wonders why mothers who attend antenatal care should develop breastfeeding problems that eventually end up in breast abscesses if mothers were adequately prepared for successful breastfeeding and if they were also given support following childbirth.

Furthermore, Majority of mothers receive antenatal care by trained staff. The ZDHS, 1996 showed that 2.7% of women are attended to by doctors and 92.9% by nurses or midwives. The proportion of women receiving antenatal care from Traditional Birth Attendants (TBA) has dropped to less than 1%. In addition, the proportion of births with no antenatal care declined from 6.3% in 1992 to 3.7% in 1996 [47]. This means that both the opportunity to provide health education, give support and show mothers how to breastfeed is not being utilized in the MCH services. If majority of mothers are attended to by trained personnel, could it be that such personnel is not adequately trained in management of breastfeeding to provide relevant information, counseling and skills necessary to prevent problems related to breastfeeding: Or could it be that some women attend antenatal care only once or none at all and hence miss

opportunity for health assessment and antenatal education for safe delivery and successful breastfeeding. For example, in Lusaka urban the coverage for first antenatal attendance is only 53% while the UTH covers 5% of all antenatal attendance [24]. This implies that 47% of women are not registering for antenatal care. Hence not exposed to relevant antenatal health education including that on preparation for and management of breastfeeding as part of safe motherhood. Consequently following delivery, due to lack of information and support, mothers develop breastfeeding problems, which end up as complications into breast abscesses.

Breast-feeding is a neglected component of Post Natal Care

Following childbirth, post partum and postnatal care have neglected breast-feeding and lactation as part of completion of conception and partition process. In maternity routine care practices it has been observed that immediate and subsequent problems related to breastfeeding during early post partum and subsequent post natal period have not received attention.

Myles defined the puerperium, which is the postnatal period "as the time beginning after the 3rd stage of labour to the end of the forty-second day following childbirth". However for the purpose of determining late complications, this period could be extended just to under one year after delivery [31].

Amongst the objectives of postnatal care, is to evaluate the health status of the mother following pregnancy and delivery. The Ministry of Health (MoH) in Zambia implemented an early postnatal follow up on the 7th day to address early postnatal problem. This is followed by the usual regimen of postnatal follow up on the 42nd day for any subsequent postnatal problems that might need attention. However, it has

been observed that health assessment for mothers at the postnatal clinic mostly concentrate on obstetrical care pertaining to height of fundus, lochia and obstetrical procedures such as cesarean section and episiotomy. Issues of breast problems and those related to breastfeeding are rarely discussed unless the mother herself presents them as her concerns. To illustrate this observation, staff in the postnatal clinic does not record the conditions of the lactating breasts and problems of breastfeeding on the mother's postnatal card and the obstetrical treatment record book [42].

On spot check at UTH maternity postnatal clinic to find out if the clinic had any records of postnatal mothers presenting with breast problems, the response was

> *"Our postnatal mothers do not have breast problems, we do not see them, but if you go to out patients casualty department, you will be given the number of breastfeeding mothers who present with breast abscesses. That's where they go".*

This shows that breast problems of breastfeeding problems as they pertain to mother's health and newborn's nutrition are not concerns of postnatal care. Breast problems and their complications have been shifted from safe motherhood and child health responsibility to general surgery where the concerns are incision and drainage only without taking into consideration that mother and baby play a reciprocal role in feeding and care of the infant.

In Zambia normally delivered mother infant pair are discharged within 6-8 hours of delivery and instructed to come back for a postnatal check up on the 7th day and at 6 weeks. It is not known of what health and infant-feeding problems may occur between discharge and 7^{th} day as well as between 7^{th} and 6^{th} week postnatal care

period. In one of the studies of postnatal care, results showed that short-term postnatal morbidity included nipple trauma, breast engorgement, mastitis and insufficient breast milk were among the presenting breast problems experienced by mothers [12, 15]. Furthermore, in a community based study conducted at UTH on morbidity among normally delivered mothers with their health new borns, found that breastfeeding problems mentioned by Inch and Glazener were also among the common causes of morbidity during the first 10 days following child birth[2]. In spite of early postnatal check up on the 7th day following childbirth mothers were presenting with common breast disorders associated with breastfeeding at the UTH. It is surprising and should be of concern that even with early postnatal care, mothers who attend in these facilities still develop breast disorders. It could be assumed that probably health care providers in these facilities are not providing appropriate breast-feeding skills and, support to mothers during the stay and before discharge from maternity units.

Poor postnatal attendance follow up could be a contributing factor to breast problems among lactating mothers. For example, in Zambia postnatal attendance was as low as 7.3% in 1994 [47]. Similarly, Service Delivery Lusaka Urban, 1999 showed postnatal coverage was only 26%. While UTH postnatal turn up for 1999 had also a low coverage of 11.2%. Under utilization of postnatal clinics by mothers contributes to some avoidable hospital admissions such as breast abscesses. These could have been prevented through early postpartum health assessment, health education and counseling for breastfeeding had mothers attended postnatal clinic.

Delay in Health Seeking Behavior

Another problem could be the delay in health seeking behavior for treatment by mothers presenting with breast abscesses. The abscesses require surgical intervention and certain cases require an antibiotic cover that involves health costs. Since the introduction of Zambia's Health Reforms Process, a "Cost Sharing" or medical fee was introduced. This fee has contributed to the reduction of the number of attendances at the hospital and health centers. One of the reasons is that majority of Zambians cannot afford to pay for health services particularly women who depend on their spouses or male relatives for financial support. There is also an attitude of having been used to free medical services offered in the previous government.

1.3. JUSTIFICATION FOR THE STUDY

Breast abscess is a common occurrence at UTH especially amongst breastfeeding mothers. It presents one of the most common indications for incision and drainage among female patients at the Female Casualty Ward. Very little research has been done in Zambia in particular and Africa in general.

This study was aimed at determining factors contributing to development of breast abscesses among breastfeeding mothers. The reasons are that most breast conditions in breastfeeding mothers are preventable. Their occurrence especially in the first six months following childbirth, interfere with appropriate breastfeeding practices that benefits both mother and baby. It is well documented that exclusive breast feed in the first six months of child's life and continued breastfeeding up to two years with timely appropriate and nutritionally adequate complimentary feeds is essential to child survival growth development and psychosocial well being. With the emergence

of MTCT of HIV, exclusive breastfeeding and prevention of breast condition to minimize MTCT through breastfeeding becomes very critical. In the breastfeeding population, mothers know their primary role in child care regarding breastfeeding especially following child birth and early infancy when they are aware that their infants' lives are dependant on mothers' providing breastfeeding and care. Development of breast conditions or any illness by the mother makes mothers feel defeated and inadequate to care for her infant. Baby Friendly Hospital Initiative (BFHI) and Mother Baby Friendly work places (MBFW) were declared to ensure that breastfeeding was appropriately initiated, managed and continued successfully for the benefit of both mother and infant.

Therefore, the findings of this study will provide information from which the following improvements can be made in midwifery routine care practices and MCH/FP services.

- Preparation for breastfeeding education and identification of at risk mothers for breastfeeding in the MCH services during antenatal care.
- Appropriate management of breastfeeding during early post partum period and provision of follow up care during lactation period.
- Intensifying exclusive breastfeeding practice among infants aged less than six months.
- Integrating MTCT interventions in the BFHI strategy to contribute to the reduction of MTCT through breastfeeding

The above measures will in turn benefit infants and young children towards survival, better growth and development as well as benefit mothers in maternal health and safe motherhood.

1.4. OPERATIONAL DEFINITIONS

Specific words, concepts and expressions used in this study are defined here as follows:

Baby	-	An infant from birth to 24 months of age.
Breastfeeding mother	-	Any female lactating and feeding her baby from her Breast
Baby friendly Hospital Initiative	-	A global movement spearhead by WHO and UNICEF, aims to give every baby the best start in life by creating a health care environment where breastfeeding is the norm
Antenatal Care	-	Care given to pregnant mothers before birth
Exclusive Breastfeeding	-	Feeding an infant on breast milk only. No water glucose, gripe water, cooking oil, formula, semi solids or traditional drinks should be given to the baby unless medically indicated
Feed	-	Any fluid or solid food given to a baby other than breast milk or prescribed medication
Breast Abscess	-	An acute inflammatory lump that yields pus on incision
Maternity Routine Practices	-	Standard procedures of care for mothers during pregnancy, labour, delivery postpartum and postnatal period
Mother to Child Transmission of HIV	-	Transmission of HIV Virus from an infected mother to the child during pregnancy, labour, delivery and through breastfeeding
Parity	-	Number of children

Post natal	-	After birth
Post partum	-	After birth of products of conception
Post partum Haemorrhage	-	Severe bleeding during the third stage of labour within 24 hours after expulsion of the placenta and within 6 weeks of delivery
Puerperal Sepsis	-	An infection of genital tract by organisms occurring within 14 days and 21 days after abortion or child birth

CHAPTER 2

2.0. OBJECTIVES OF THE STUDY

2.1. General Objective

To document the frequency of known factors associated with development of breast abscess among breastfeeding mothers at University Teaching Hospital Female Casualty ward.

2.2. Specific Objective

1. To illustrate the socio-economic and demographic background of breastfeeding mothers presenting with breast abscesses at the UTH female casualty ward.
2. To identify common breast conditions experienced by breastfeeding mothers among the study population.
3. To establish the most common causative organism isolated from breast abscess of breastfeeding mothers presenting with breast abscess.
4. To establish the HIV status in breastfeeding mothers presenting with breast abscess.
5. To make recommendations to institutions that have maternal and child health programmes on their agenda on practices pertaining to the management of Breastfeeding.

CHAPTER 3

3.0 LITERATURE REVIEW

In Zambia, information on incidents of breast abscesses and factors contributing to development of breast abscesses among breastfeeding mothers are limited. Studies on breast diseases that have been done by a number of people in other countries have taken the aspect of cancer, while only a few have done benign lesions of the breast where breast abscesses are included.

A breast abscess has been defined as an acute inflammatory lump that yields pus on incision. It is a painful swelling that may be fluctualant [45].

Incidence of Breast Abscesses

World Health Organization 2000, on mastitis, causes and management states that mastitis and breast abscesses occur in all population whether or not breastfeeding is the norm. The reported incidence varies from a few to 33% of lactating women but usually under 10 % percent. Most studies have major methodological limitation and there are no large prospective cohort studies. The higher rates are from selected studies [45].

The incidence of breast abscesses also vary widely and most estimates are from retrospective studies of patients with mastitis. No investigations have been done to find out from the mothers themselves about their experience of having mastitis during the period of breastfeeding their babies In 1948, Leany reviewed several studies and found collectively an incidence of 2.1% [22].

In a later study by Marshal in 1975 that included 2,534 women, 2.5% of breastfeeding mothers were reported as having mastitis [25]. However the actual incidence may be much higher since some cases are not reported or treated and mastitis may result in early weaning. Riordan in 1983, in her study found that of 100 women attending a La Leche League meeting, 26% reported having had mastitis at some point during the breastfeeding period.

The incidence of breast abscesses amongst breastfeeding mothers who develop mastitis is illustrated in a number of studies. Marshal in the United States on a study sporadic puerperal mastitis found 4.6% women with breast abscesses had mastitis. Niebyl et al 1978 in the United States in a study on sporadic non-epidemic puerperal mastitis found that 11.5% of women with mastitis developed breast abscess [37]. Thomsen in 1984 in Denmark found 11% of breast abscess among breastfeeding women with breast inflammation [38].

Time of occurrence of mastitis as demonstrated by some studies show that mastitis is commonest in the second and third week post partum as seen in a study by Creasy in1984 [4]. Most reports indicate that 74-95% of cases occur in the first 12 weeks [10]. However it may occur at any stage of lactation including in the second year [1].Breast abscess is also commonest in the first 6 weeks post-partum but may occur later [8].

Causes of breast abscesses

The World Health Organization (WHO) on mastitis, causes and management of mastitis divides causes of breast infection into milk stasis, infection and predisposing factors.

Milk stasis

Milk stasis is a primary cause of breast milk stagnation resulting into a localized infection. In milk stasis breast milk is not effectively removed. Causes of the failure to effectively remove breast milk can be due to several factors.

The first factor is that of physiologic breast engorgement which occurs during the first week of post partum as a marker of normal progression of lactogenesis. When physiologic engorgement is not relieved it leads to a pathologic engorgement, which overfilling of alveoli, lactiferous ducts and sinuses secondary to milk stasis occurring at any time during lactation period [45].

Newton and Newton in 1950 concluded that the retention of milk in the alveoli is the underlying etiology of breast engorgement. Potential factors contributing to milk retention in the breast include failure of the let down process, maternal indifference to breastfeeding, hospital feeding practices that do not permit adequate emptying of breast, and infant factors such as weight [32].

In pathologic engorgement the mother may have fever. This is known as "milk fever" which normally occurs about the third day after delivery.

The second factor is that of poor attachment of baby to the breast. This was first recognized by Gunther M in 1958 [14]. Poor attachment as a cause of inefficient milk removal is now seen as a major predisposing factor for mastitis that subsequently ends in formation of breast abscess [1]. Poor attachment at the breast is the commonest cause of nipple pain and trauma which make mothers avoid feeding on the affected breast predisposing to milk stasis, leading to pathologic breast

engorgement which if not effectively managed ends into mastitis and finally formation of breast abscess.

The third factor related to ineffective remove of the breast milk is that mechanical origin. This is associated with which breast is affected most, that is the preferred side of breast for feeding the infant. It has been suggested that poor attachment leading to milk stasis and mastitis might be more likely to occur on the side that the mothers find more difficult to attach the infant, relating mother's right or left handiness. However, several studies conducted of the frequency with which side is most affected showed no significant differences. Thirty seven to fifty two percent of cases involved the right breast and 38% to 57% with the left breast with bilateral mastitis in 3% to 12% [32]. Other mechanical factors contributing to milk stasis could be those that interfere with attachment to the breast. These include short frenulum which may cause sore and fissured nipple, use of pacifier and bottle and teat [26]. On the part of the mother, tight clothing and prone sleeping position contribute to milk stasis. Over abundance of milk supply may also predispose the breast to milk stasis.

Causative Organism in breast infection

On causes of breast infection of Breast Disorders in Nursing Mothers WHO has listed bacteria commonly isolated from the milk of nursing mothers with mastitis as frequently isolated bacteria being staphylococcus aureus, coagulase - negative staphylococci, Beta Hemolytic Streptococci, Streptococcus faecalis, Escherichia coli, Deptheroids. Infrequently isolated are enterobacter Cloacae, Serratia marcescens, Pseudomonas aeruginosa Haemophilus influenzae, Klebsiella Pneumoniae, Bacteroides Fragilis

Mycoplasma and chlamydia species do not appear to play a role in mastitis [38]. Staphylococcus aureus is the most frequent organism isolated, accounting for 48% of cases in one study [25]. Furthermore in the same study it was noted that infectious sporadic and epidemic puerperal mastitis that eventually end in breast abscess are hospital occurred infections caused by staphylococcus aureus that may affect both breasts. This is due to poor nursery conditions with no hand washing facilities by health workers who handle infants.

In the ABC of Breast Diseases on breast infection, Dixon in 1994 categorized breast infection according to organisms responsible for the breast infections as neonatal breast infection, lactating breast, non-lactating breast and skin associated breast infections[6]. In all these breast infections, the common responsible organism is staphylococcus aureus and occasionally fungi. Skin infection presents as cellulitis or an abscess of the skin associated breast infections. Mastitis caused by fungal infection could be associated with candidiasis in breastfeeding mother and infant. Oral candidiasis or thrush is a fungal infection caused by candida albicans which commonly affects newborn and infants. This infection can result in painful inflammation of tongue, soft and hard palate and buccal and gingival mucosa. In the mother, the cardinal signs of candidiasis of the breasts are sores and reddened nipples [20].

A rare cause of breast infection is tuberculosis.Tuberculosis of the breast is now rare and can be primary or more commonly secondary. Clues to its diagnosis include the presence of breast or axillary sinus in up to half of patients. The commonest presentation of tuberculosis nowadays is with an abscess resulting from infection of a

tuberculous cavity by an acute pyogenic organism such as staphylococcus aureus. In populations where tuberculosis is endemic, microbacterium tuberculosis may be found in about one percent (1%) of cases with mastitis and associated in some cases with tuberculous tonsillitis in infant [13].

Route of Infection

Several routes of infection have been suggested. These include: through lactiferous ducts into a lobe, by haemotogenous spread and through a nipple fissure into periductal lymphatic system. Nipple fissure has been reported with increased frequency in the presence of mastitis [7]. In a prospective randomized clinical trial, Livingstone studied the effects of antibiotic treatment of women with nipple fissure from which staphylococcus aureus was cultured she found that women who were treated with systemic antibiotics were four to five times less likely to develop mastitis than women who were treated with a topical preparation or with improved breastfeeding technique alone [23]. In this respect, it is likely that a fissure provides an entry point for infection even in the absence of mastitis.

Predisposing Factors

There are a number of factors that have been associated with an increase in the risk of developing mastitis. One of the factors is age in which one retrospective study showed that women aged between 21 – 25 years were more likely to develop mastitis than those under 21 and over [17] .The second factor is parity. Primiparity is found to be a risk factor. In a study by Evans et al in 1995, it was found that 40 to 54% of women had suffered one or more previous [8].This could be a result of uncorrected poor breastfeeding technique. Complicated deliveries may increase risk of mastitis.

Immune factors in breast milk have been associated with mastitis. Breast milk has a number of protective factors, such as IgA, lactoferrin, lysozyme and C3 a component of the complement system, and leukocytes which protect breastfed infants, may also help to protect the breast against infection. The protective factors prevent staphylococcus aureus from being established . C3 and IgA promote phagocytosis of staphylococcus aureus by leukocytes in milk and lactoferrin increases adhesion of leukocytes to tissue at the site of inflammation. A study in Gambia showed that women who experienced repeated bouts of mastitis were found to have a low levels of IgA, C3 and lactoferrin in milk in comparison with other lactating mothers. This suggested that when levels of protective factors are low, effective defense may be reduced and the risk of current mastitis increased [37, 38] .Another immune factor could be the HIV status of a breastfeeding mother. An HIV positive status may exaggerate simple breast conditions into abscesses.

Other predisposing factors are stress, fatigue, local factors in the breast, trauma to the breast usually from domestic violence and employment factors outside home when breastfeeding mothers lack time to express breast milk adequately.

Poor nutritional status amongst breastfeeding mothers could be a development of mastitis and subsequent breast abscess.

In developing countries like Zambia, 46% of women suffer from Iron deficiency anaemia and the rate increases to 50% during pregnancy [31]. Anaemia causes extreme fatigue, with other factors that makes a woman vulnerable to infections. Vitamin A deficiency that is also common in pregnant women increases the risk of reproductive tract infections and diminishes a woman's ability to fight infections. Iodine

deficiency increases the metabolic rate that causes extreme fatigue to pregnant women and adds to the stress following childbirth. Another nutritional concern is that of high salt intake. This is thought to increase the risk of mastitis in lactating mothers [29].

CHAPTER 4

4.0 METHODOLOGY

Research design

This was a cross section study, which aimed at collecting and presenting data about breastfeeding mothers presenting with breast abscesses. The study was designed to quantify the distribution of variables on socio and demographic data, obstetrical data, morbidity and relevant laboratory data pertaining to the study.

A cross section type of study design was used for the following reasons: -

1. The method enables the investigator to collect current information about the study.
2. It was also gives provision for consistency in terms of data collection.
3. The design allowed for collection of information from a variety of individuals who shared similar characteristics to be studied.
4. The design does not involve experimentation to answer. The major controls are statistical rather than experimental.

Furthermore WHO (1988) defined this study design as one that involves systematic collection and presentation of data to give a clear picture of a particular situation. It also involves identifying and exploring a number of often mutually related variables that give insight to the nature and causes of certain problems or situations and in the consequences of a problem for those affected at the time. Therefore this cross section descriptive study design was actually describing and quantifying the distribution of certain variables in a study population at one point in time that is the point of and during breastfeeding period.

The study is also qualitative in that it sought out to identify and explore contributing factors leading to development of breast abscesses amongst breastfeeding mothers which include among others, parity, breastfeeding technique, breast condition and health education.

4.1. Research setting

The study took place in Lusaka, the capital city of Zambia. The total population of Lusaka though put at 1,753,681, the service area population is believed to be well over 2 million. Women and children below the age of 5 years form 44% of the total population with women in childbearing age accounting for 22%. Fertility rate is 5.5 per family and annual growth rate of 6.2% is one of the highest in the country [48].

Lusaka like most urban cities is surrounded by shanty compounds on the out skirts of the city. Most compounds are heavily populated and lack adequate provision of public health services such as clean water supply, refuse and sewerage disposal. Although it is documented that 60% of Lusaka City Council has piped water, this is no longer true as most of the illegal residential areas have no piped water or boreholes. For areas with piped water, the flow is intermittent becoming worse in the dry season and when there is draught. It is believed that there are over 10,000 shallow wells in George, Chazanga, Garden and Chaisa compounds. The water from these wells is highly contaminated. Lusaka City Council 20% of the houses are on sewerage lines and 40% on septic tanks. Most houses in the peri-urban residential areas use pit latrines.

Health care in Lusaka is provided by government, private sector, parastatal, private companies and traditional healers. Under the government sector, there are three hospitals namely the University Teaching Hospital (UTH) with 1,835 beds of which 296 account for maternity department and 88 for gynaecology, Chainama Hospital with 500 beds, Maina Soko with 66 beds. The UTH is the National Referral and Teaching Hospital and is accessible to the majority of people in Lusaka, while Maina Soko hospital is a Military hospital with limited accessibility mostly to service those employed in the defence force only. Chainama was until recently a mental hospital but now is operating a general hospital.

There are 24 government health centres and four first aid posts. Chainama health centre which is amongst the 24 is now under Chainama Hospital Management Board as it has always been used a teaching post in Health Sciences. The health centres are divided into 8 administrative zones

Staffing pattern in health facilities has significantly reduced due to retrenchments and voluntary separation from services with good packages. The state of country poverty has also lead to migration of professional staff to neighboring countries for better quality of life. Inadequate staffing, lack of drugs, equipment and supplies has greatly contributed to poor quality of services in the government health facilities including UTH.

4.2. Study setting

The study was conducted at the UTH Female Casualty Surgical Ward where abscesses and other surgical conditions of short-term management are admitted.

Abscesses are usually incised, drained in the emergency operating theatre as part of out patient service. Patients are discharged on the same day with an appropriate prescription of continuum of care that includes wound care, analgesics and sometimes as per surgeon's practice might include an antibiotic cover. A date for review to the nearest health facility of the clients was given usually within 5 days post incision and drainage. Review at the UTH surgical clinic is only given to severe cases. Likewise mothers with breast abscesses were attended to and discharged under the management described.

For the purpose of this research mothers were requested to come back for the review at UTH. This is because there was need to collect obstetrical data from their ANC record as well as history delivery.

4.3. Study population

The study population was drawn from women presenting with breast abscess who were referred to UTH female casualty for consultation and management of the abscesses.

Inclusion criteria

The below formed the inclusion criteria :-

- Women presenting with breast abscesses, must be breastfeeding mothers
- On clinical examination there must be an evidence of an abscess on the affected breast
- Mothers had to be willing to consent for laboratory investigations of secretions from the abscess and blood tests required for the study

- Mothers were willing to consent to have photographs of breast abscesses taken (only on some mothers)

Exclusion criteria

- Women with abscesses who are not lactating.
- Women who are unwilling to participate in the study.

Diagnosis of Breast Abscess

The diagnosis of breast abscess was made on two levels:

The fist level was a level of provisional diagnosis and the second level was the level of identification of causative organisms and other microbes influencing the formation of breast abscess. At the level of provisional diagnosis breastfeeding mothers with breast abscess who were enrolled in the study were clinically and physically examined. Both breasts were clinically and manually examined to exclude any abnormalities in the unaffected breast where there was no bilateral infection of the breasts. The state of lactation and breastfeeding were also assessed.

At the level of identification of the causative organisms and other microbes aspirates or a swab of secretions from the abscess was taken for culture and sensitivity. Pus swabs or aspirates were taken to the laboratory for procedures to isolate the bacteria associated with the formation of the breast abscess. The blood for heamoglobin in and HIV test was taken to establish the status of the mother. The test was done an anonymously and unlinked. Investigations have been covered in detail later in the methodology.

4.4. Sample size

Sample size was calculated using the standard formula:

$$n = \frac{Z^2 P (100-P)}{D^2}$$

Z = 1.96 from normal distribution

P = Estimated period prevalence of 7%

D = Absolute sampling error of 5%

$$n = \frac{(1.96)^2\ 7(100-7)}{25}$$

$$=100$$

The formula yielded a sample size of 100, however to ensure that the sample meet the criteria for inclusion 112 cases were selected.

4.5. Sampling method

Individual subjects were identified and selected from female surgical casualty ward admission register. All breastfeeding mothers with evidence of breast abscess following clinical and manual examination upon admission were enrolled on daily basis, Monday to Friday except on weekends. Mothers were enrolled during a period beginning April to December 1999. Enrollment during weekends was excluded due unavailability of laboratory services during the weekend for this particular study.

4.6. Data collection

4.6.1 Instruments used for data collection

Data was collected at three levels on each subject. Level one was the administration of the structured interview schedule, level two was collection of specimen for laboratory investigations and level 3 was taking of photographs of outstanding breast conditions.

Structured interview schedule

The structured interview schedule was used to collect data from the respondents. It was felt that the structured interview was appropriate for various reasons. Some of the reasons are firstly the tool could be applied to both literate and illiterate subjects. Secondly if the interviewee does not understand the questions, the investigator may repeat or reword them for clarity. Thirdly, flexibility can be exercised and sensitive questions may need establishing a rapport with respondents and rephrasing the questions.

Laboratory investigations

Breastfeeding mothers who were recruited in the study had three laboratory investigations done as part of identification of risk factors associated with development of breast abscesses. The investigations done included culture and sensitivity from pus swab or aspirate of pus from the abscess, blood for haemoglobin and antibody test for HIV. The specimens were taken under the supervision of the laboratory technician. Requirements for collection were readily available as per standards. (Appendix)

Culture and sensitive

Pus swab or aspirates were obtained from the breast abscess of each mother to isolate any bacteria that could be associated with breast abscess formation. The specimens were immediately taken to the bacteriology laboratory within 20 - 30 minutes of the collection from the subject.

Microscopic examination included the following characteristics of pus such as colour, consistency, smell or presence of granules. Heat fixed smears were made on slides and stained with a Gram's Stain and Ziehl Neelsen (ZN) Stain and examined under microscope using oil immersion lens for microorganisms.

Culture technique followed the procedure in which pus specimen was inoculated into Blood Agar (BA), Citrate Agar (CA) and Mac Conkey (MaC). BA and Mac were incubated aerobically and CA anaerobically, at 37^0C for about 18 hours. The cultures were read and sub cultured for identification of bacteria. This was followed by antibiotic sensitivity testing by innoculating test isolates and antibiotic discs on to Muller Hittion Agar (MHA).

Antibiotic sensitive was validated by testing control staphylococcus aureus and Escherichia coli oli MHA using the same antiobiotic discs.

Haemoglobin estimation

Blood samples were collected aseptically and dispensed 3ml in EDTA container for haemoglobin (Hb) estimation. Samples were sent to haemoglobin laboratory within 20 - 30 minutes of their collection. Haemoglobin was estimated using Coulter T660,

Hematological Auto Analyser. The results were validated by doing haematocrit on the same blood samples and testing commercial blood (Counter 4C) on the autoanalyser. Normal Reference Ranges for Hb: 13 - 15g/d1 (women).

HIV antibody test (RVT)

Blood samples were collected aseptically and dispensed 5ml in plain container. The samples were taken to virology section within 20 - 30 minutes of collection. Collected serum was separated from blood, placed in microtubules and stored at - 20^0C in a deep freezer until there were about 20 serum samples. Serum samples were tested for HIV using Capillus TN HIV-1/HIV-2 Kit. This is a latex aggregation test for detection of human antibodies to HIV-1/HIV-2, In human serum or plasma, sensitivity 98.8%. The capillus Kit has been evaluated in Zambia by Virology Laboratory (UTH Pathology and Microbiology Department).

The results are reported as reactive (positive) for serum containing human antibodies to HIV, and non reactive (negative) for serum not containing human antibodies to HIV. The HIV test was anonymous and unlinked.

Visual illustration of breast abscesses

As part of data collection, medical illustration Unit was informed of their participation. Arrangements were made to have one staff available and accessible upon request to have the photographs of breast conditions taken from study subjects. The reasons for taking photographs was to demonstrate the magnitude of problems related to breast abscesses and use such photographs as teaching visual aids in

breastfeeding education and used to sensitise the health workers on the magnitude of the problem.

4.6.2 Pilots Study

In preparation for the study, a research team was identified. The team comprised of the principal investigator, a doctor from each surgical firm, laboratory technician, research assistant, sister in charge and one officer from Medical Illustration Unit. An orientation to the research protocol and procedures to be carried out in the course of data collection was conducted. Staff involved, department and management relevant to research and the study setting were informed of the activities. Request for their cooperation was made.

A pilot study was conducted on twenty breastfeeding mothers; one month before the main study. The purpose of a pilot study was to detect gaps that needed to be corrected before the major study was initiated and make improvements in the research protocol and management. Improvements included clarification of definitions of some breast conditions in local language, answers to questions, assessment of time needed to administer a questionnaire and whether clients understood the wording of the questions.

Upon admission, the study subjects were assessed, clinically examined and provisional diagnosis established. Thereafter study subjects were identified and consent was obtained to participate in the research. The purpose of research and what was to be involved was explained. Permission to collect information, specimens for

laboratory investigations and photographs to be taken when indicated was obtained from study subjects.

Interviews were conducted in the ward and measures for privacy and comfort of clients were made. Since all mothers came with their babies but babies had to be left outside the admission ward with a care taker, permission was obtained for mothers in the study to be allowed to stay with their babies during the time of interview and as long as possible before going to theatre. This helped mothers feel relaxed Health Education materials on breastfeeding was also given to all breastfeeding mothers with or without abscess. After each interview the specimens for laboratory investigations were taken.

When there was an indication for a photograph of an outstanding breast condition, the Medical Illustration Unit was informed to come and take a photograph of such a breast.

In the process of data collection, care was taken to ensure that there was minimal disruption of normal ward and theater routine activities. This was achieved through dialogue with the concerned Ward Managers and Consultant Surgeons who also were part of the theatre team.

Following the pilot study the questionnaire, patient flow analysis and process of laboratory investigations and taking of photographs were adjusted.

Data analysis

Data was analysed using EPI -INFO soft ware.

Ethical consideration

Permission to undertake the study was obtained from the Research Ethics Committee of the University of Zambia, the Executive Director of the University Teaching Hospital Board of Management, The Head, Department of Surgery, the Director of Nursing Services and the Nursing Manager of Casualty Department Female Surgical Ward.

Participation in the study by the subjects was purely voluntary. Written consents were also obtained from each participant after explaining to or her fully the purpose of the study. Subjects were assured of confidentiality of the information given. No names were put on the respondents interview forms only codes were used. However, the HIV test was done anonymously and unlinked. During the process of data collection there were no problems experienced. Mothers were actually helped on management of breastfeeding and literature given to them were considered as great benefit.

4.6.3 Limitation of the study

The following were the limitation of the study:

1. **Rapid Turnover of Mothers**

   The rapid turn over of patients affected the quality of data collection. Subjects had to be clerked, prepared for theatre and at the same time data for research collected. This made the process to be in a rush in an attempt to

avoid losing study subjects. Study subjects spent an average of two and half hours before surgery in which both routine and research activities had to be done.

2. **Shortage of Water Supply at UTH**

Between March and June UTH had a major problem of water supply in the wards that affected surgical procedures. This affected recruitment of study subjects that had to be temporarily stopped until conditions for resuming the research were normalized.

3. **Delay in placing of Intern Doctors to surgical Department**

A three weeks delay in placing intern doctors in the surgical department affected recruitment of study subjects. Doctors from surgical department of each firm were part of the research team. The absence of doctors to be identified for participation in research interrupted the recruitment of study subjects causing further delay in the data collection.

4. **Lack of Laboratory Services over the weekend**

Non availability of laboratory services over the weekend affected the recruitment of clients. It was observed that most mothers turned up for management of breast abscess over the weekend. Probably a weekend was more favorable to find help with the baby or probably by weekend, financing for transport to come to UTH would have been mobilized. Lack of weekend laboratory services contributed to a delay in data collection of study subjects.

5. **Poor Turn Up for Reviews**

There was a poor turn up (10%) of mothers for review as most of them went to their nearest clinics. Efforts were made to follow them up to the respective

clinics. This made logistics for follow up to collect information difficult and expensive.

6. **Short Fall in Funding**

Funding of the study greatly affected the duration of its completion. The initial funding met 60% costs of research requirements. The process of soliciting for supplementary funding affected the consistent continuation to recruit study subjects. The devaluation of the Kwacha also contributed to the shortfall of required supplementary funding.

CHAPTER 5

RESULTS

All respondents were breastfeeding mothers presenting with breast abscesses at female casualty UTH. A total number of 112 were interviewed and laboratory investigations for causative organisms, haemoglobin levels and HIV status were carried out. General health examination and breast assessment of both affected and unaffected breast was done.

5.3. Section A - Demographic Characteristics.

Table I below shows the socio-demographic characteristics of the Mothers

Characteristics	Frequency	Percentage
Age		
15-19 years	29	25.9
20-24 years	41	36.6
25-29 years	24	21.4
30-34 years	12	10.7
35+	6	6
Total	112	100.0

Characteristics	Frequency	Percentage
Residence		
Low	11	9.8
Medium	15	13.4
High	86	76.8
Total	112	100.0

Characteristics	Frequency	Percentage
Marital Status		
Married	86	76.8
Separated	5	4.5
Divorced	2	1.8
Widow	4	3.6
Single	15	13.4
Total	112	100.0

Characteristics	Frequency	Percentage
Educational level		
None	9	8
Primary	71	63.4
Secondary	27	24.1
College/University	5	4.5
Total	112	100.0

Characteristics	Frequency	Percentage
Income Level		
BelowK50, 000	44	39.3
K51, 000-K100, 000	33	29.5
K101, 000-K150, 000	15	13.4
K151, 000-K2000000	5	4.5
K201,000- K2500000+	15	13.4
Total	112	100.0

5.4. Demographic data of respondents' obstetrical characteristics

Table 2: Below shows the obstetrical characteristics of the mothers

Characteristics	Frequency	Percentage
Parity		
Para 1	44	39.3
Para 2	28	25.0
Para 3 – 4	30	26.8
Para 5 – 10	10	8.9
Total	112	100.0

Characteristics	Frequency	Percentage
ANC care received from		
Hospital	9	8.0
Clinic	99	25.0
Private Hospital	0	88.4
No ante-natal care	4	0
		3.6
Total	112	100.0

Characteristics	Frequency	Percentage
Number of ANC visits		
7-9	18	16.1
6	21	18.8
4	19	17.0
3	8	7.1
2	11	9.8
1	5	4.5
0	4	3.6
Total	112	100.0

Characteristics	Frequency	Percentage
Place of delivery		
Hospital	20	17.9
Clinic	84	75.0
Home	8	7.1
Total	112	100.0

Characteristics	Frequency	Percentage
Mode of delivery		
SVD	107	95.5
C/S	2	1.8
A/D	3	2.7
Total	112	100.0

SVD - Spontaneous Vertex Delivery

C/S - Caesarian Section

AD - Assisted Delivery

5.5. Preparation for and health education on management of breastfeeding during the last antenatal care visits and following delivery

Table 3: Below shows responses on preparation and management of Breastfeeding

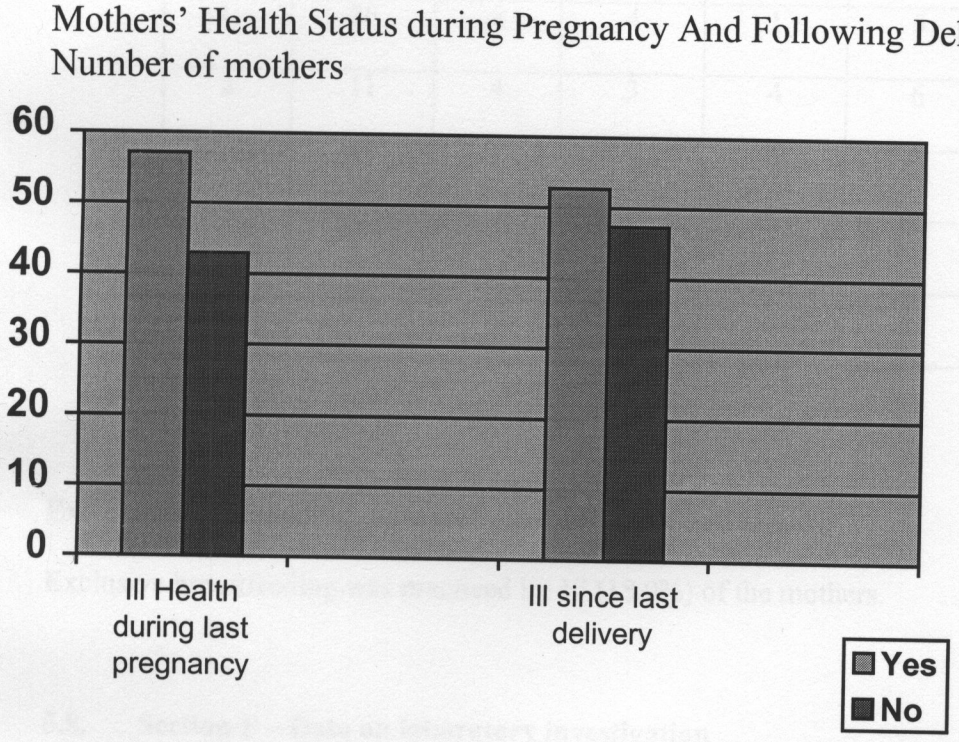
Responses	Yes	%
Breast examination	16	14.3
Breastfeeding education	4	3.6
Correct positioning and attachment to the breast	3	2.7
Expression of breast milk	6	5.4
Initiating breastfeeding soon after birth	6	5.4
Helped and shown how to breastfeed	10	8.9

5.6. Section D. Data on Mothers' Health status prior to current breast condition .

Ill health experienced covered malaria, general poor health and anaemia on ill health during pregnancy 64 (75.1%) said they had been ill while 48 (42.9%) responded that they had been healthy. On health following delivery, 59 (52.7%) said they had been ill while 53 (47.3%) said that they were healthy. For breast conditions experienced 61

(54.5%) had cracked nipple, 37 (33%) had breast engorgement and 52 (46.4%) had mastitis. About 56 (50%) had a combination of one of the breast conditions.

Next page is the graph showing mother's health status during the last pregnancy and following childbirth.



Breast conditions experienced by mothers

Characteristics	Frequency	
Responses on Breast conditions	**Yes**	**%**
Cracked nipple	61	54.5
Breast engorgement	37	33
Mastitis	52	46.4
Combination of breast conditions	56	50

5.7. Section E – Data on Infants

Table 4 Age of infants and parity at time of presentation to hospital with breast abscess

Parity and Age week

Parity	Age week					
	0 –4	5 – 8	9 – 12	13 – 24	25 wks	Total
1	26	8	4	1	5	44
2	11	4	3	4	6	28
3 – 4	11	7	2	2	8	30
4 – 5	2	2	1	2	3	10
Total	50	21	10	9	22	112

Exclusive breastfeeding in infants aged 24 weeks and less.

Exclusive breastfeeding was practiced by 17 (18.9%) of the mothers.

5.8. Section F – Data on laboratory investigation

On heamoglobin levels 62 (55.4%) of respondents had their haemoglobin levels of 10g/d and below. One mother had her haemoglobin as low as 6g/dl. For micro organisms Staphylococcous aureus accounted for 94.6% of the total organisms isolated. On the HIV status, 72 (64.3%) were sero positive.

CHAPTER 6

DISCUSSION OF RESULTS

6.1. Introduction

This chapter presents the discussion of the main findings from the study. The study identified a number of factors that may contribute to the development of breast abscesses among breastfeeding mothers. The study was a cross section descriptive in nature.

6.2. Socio-demographic characteristics

The study highlights some important demographic variables relating to factors contributing to the development of breast abscess among breastfeeding mothers.

Majority of mothers had low levels of education. No education or up to primary school level accounted for 71.4%. The majority of 62.5% of mothers were aged 15 – 24 years. These findings may be attributed to the fact that women spend less time in school and hence get married at an early age. The Report on evolution of poverty in Zambia 1998 showed that Zambia has the highest adult illiteracy rate in the region. Fifteen percent of school going age has no access to education and three quarters of

those in grade 6 are functionally illiterate [40, 41]. Illiteracy has adverse disadvantages especially for women. Less educated women have limited or no access to literature and other forms of information than their educated peers.

In line with educational attainment and age was the household income per month. 86.7% of mothers came from homes where the income was below the Zambia poverty line which is calculated on the food basket approach of K224, 000 for a family of six [46]. Low levels of education are associated with low income.

6.3. Obstetrical Data

The majority 39.3% were primiparas. This could be attributed that the mothers were young and had no experience. This is also in line that the age group of such mothers ranged between 15 and 24 years. In obstetric and safe motherhood practice teenage pregnancy and primiparity are categorized in the high-risk group [33]. Hence it is not surprising that the majority of mothers presenting with breast abscess were first time mothers. It was also found that the second in majority were second time mothers. They accounted for 25%. This could be due to the fact that they are not corrected with the first baby on the management of breastfeeding.

Lack of preparation in breastfeeding education and appropriate management of lactation was a significant factor. Findings showed that almost all mothers 97.3% did not receive appropriate preparation for breastfeeding in spite of an average attendance of ANC visits. Following delivery and before discharge from the health facility, mothers were not helped or shown how to breastfeed. Most women enrolled in the study delivered by uncomplicated spontaneous vaginal delivery (95.5%). The majority of these women delivered in a health institution that ideally should provide

information and education on breastfeeding. The study also highlighted that 91% of the mothers in the study were not shown and helped to breastfeed after delivery. These statistics show that lack of inappropriate management of breastfeeding results in breast problems such as cracked, sore nipples breast engorgement and mastitis.
In line with these problems the study found that these mothers experienced one or a combination of such breastfeeding problems the commonest being cracked nipples. More than half the women (54.4%) experienced cracked nipples, 33% breast engorgement and 46.4% said they experienced mastitis. All these conditions were experienced prior to the development of breast abscess. Nipple trauma is greatly associated with staphyloccal infection and mastitis [7]

Illnesses ranged from malaria, general ill health to anaemia as reported by the mothers. It is possible that general health status of mothers could have influenced the development of breast abscesses in breastfeeding mothers. Stress fatigue and pain are greatly linked to mastitis [5]. In line with the finding on the haemoglobin status, 55.4% of mothers had the haemoglobin below 10gm. One of the effects of anaemia is fatigue and low resistance to infection. This could be one of the factors associated with breast abscesses.

In addition to breast conditions experienced another significant finding was that of the health status of the mothers during the last pregnancy and following current childbirth. The study showed that 57.1% had fallen ill during pregnancy and 49% had a spell of an illness prior to development of breast abscess.

A very striking factor noted was the age of infants that was actually reflecting on the postnatal period in relation to development of breast abscesses. Majority 72.4% of infants were aged 12 weeks of which 44.7% were infants aged 4 weeks. In the same category 5 (4.5%) were aged 1 week, 16 (14.3%) 2 weeks and 19 (17%) were 3 weeks old. Poor attachment of a baby to the breast as a cause of inefficient milk removal is now seen as a major predisposing factor for mastitis which ends subsequently into a breast abscess .It is possible that mothers were not helped and shown how to correctly position and attach the baby to the breast soon after delivery and before discharge from the health facility of delivery. During the first and second months following delivery when lactation is being established, it is possible that mothers were not helped to prevent common lactation problems such as breast engorgement and blocked lactiferous ducts that require efficient removal of breast milk to prevent complications of mastitis and consequently mastitis. This study has shown that changes brought about by the Baby Friendly Hospital Initiative (BFHI) in the mid 1990s had brought about positive changes towards improving practices on management of breastfeeding. The change had been evidenced by a decline in breast abscesses among breastfeeding mothers from 1,700 in 1992 –1993 records to 720 in 1997-1998 records. This change was also observed in the 10 clinics with maternity facilities. Appropriate health care facility practices of breastfeeding greatly influence mothers' practices that prevent breast conditions and make breastfeeding more rewarding [32]. The study has also shown that although almost all mothers attended antenatal care and delivered in health facilities, health care staff did not provide services related to management of breastfeeding either because they were not knowledgeable or had taken breastfeeding for granted. Majority of mothers had

experienced preventable conditions such as cracked/sore nipples prior to the development of breast abscess.

The age of infants also show that post natal care at one week and at six weeks pays inadequate attention to breastfeeding, infant nutrition and health, maternal health pertaining to lactation and maternal nutrition. In one of the studies on postnatal care, results showed that short term post natal morbidity included breast engorgement, mastitis and insufficient breast milk were among the presenting breast problems experienced by mothers [12,15] .Most mothers avoid reporting such problems thinking that they are part of "normal" childbirth process.

6.4. Laboratory Results

The laboratory results have a significant mark in the factors influencing the development of breast abscesses. Results on the causative organisms showed that staphylococcus aureus was the isolated organism in 94.6% of specimen taken for culture. In view of low-income status of the study population, it is possible the mothers could have associated micronutrient deficiencies in particular iron deficiency anaemia. In this study 55% of mothers had hemoglobin levels below 10gm. This finding is consistent with findings in the UNFPA/MOH Report on Factors associated with Maternal Mortality in Zambia 1998 which stated that 46% of women in Zambia are anaemic and that anaemia during pregnancy rises to 50% [29].

In relation to income factors is the area of residence. The majority 76.8% resided in high-density areas with environmental sanitation factors. Staphylococcal organisms are the commonest pyogens associated with poor environmental sanitation. This is in line with the finding of the study in which the most common organism isolated from

breast abscess was staphylococcal 94.6% of mothers. It is a well known fact that where there is shortages of water and inadequate hand washing facilities cross infection can occur from the attending person to the mother and infant. In this study it has been noted that the majority (92%) of mothers delivered in health facility and 7.1% delivered at home. It is possible that staff in health facilities could be a source of staphylococcal infection if precautions on cross infection are not taken. In Maternity Units, it has been observed that infectious sporadic and epidemic proportion may occur. This infection is due to staphylococcal carriers among the nursing staff who contaminate infants during the handling procedures in maternity units where there are poor nursery conditions or words with poor hand washing facilities [34]. It was noted in the same study that the second day of life, majority of infants, 50% harbor staphylococcal in the nasopharynx.

Fifty five percent of mothers were anaemic according to the WHO definition of anaemia as an Hb of 10 and below. Reflecting on the characteristics of the study population, in particular the age, educational level and income the risk of being exposed to staphylococcal infection and having low haemoglobin levels is high. At the same time appropriate good nutrition, improved environmental sanitation, general hygiene and management of breastfeeding will greatly control the laboratory variables.

Of the 112 women in the study, 64.3% of the women were HIV sero positive. The average national sero prevalence of HIV in Zambia is 19.7% and the average prevalence of HIV in Lusaka province is 27.3% [28]. This study showed almost twice

the incidence of HIV among women with breast abscesses compared to the general population.

Mother-to-Child-Transmission of HIV through breastfeeding has become a global concern. With such high prevalence among mothers presenting with breast abscesses it should be of a national concern to prevent the development of breast condition in the breastfeeding population. In addition measures to address mother-to-child-transmission of HIV should be intensified in the BFHI activities including antenatal and postnatal period and in the general population of women.

Breast abscesses were show to be more common among the HIV positive women in this study probably as a result of the complex immunological interactions resulting in failure of the body to mount an appropriate immune response when faced with infection. HIV infection was a statistically significant variable in the development of breast abscesses.

CHAPTER 7

CONCLUSION AND RECOMMENDATIONS

7.1. Conclusions

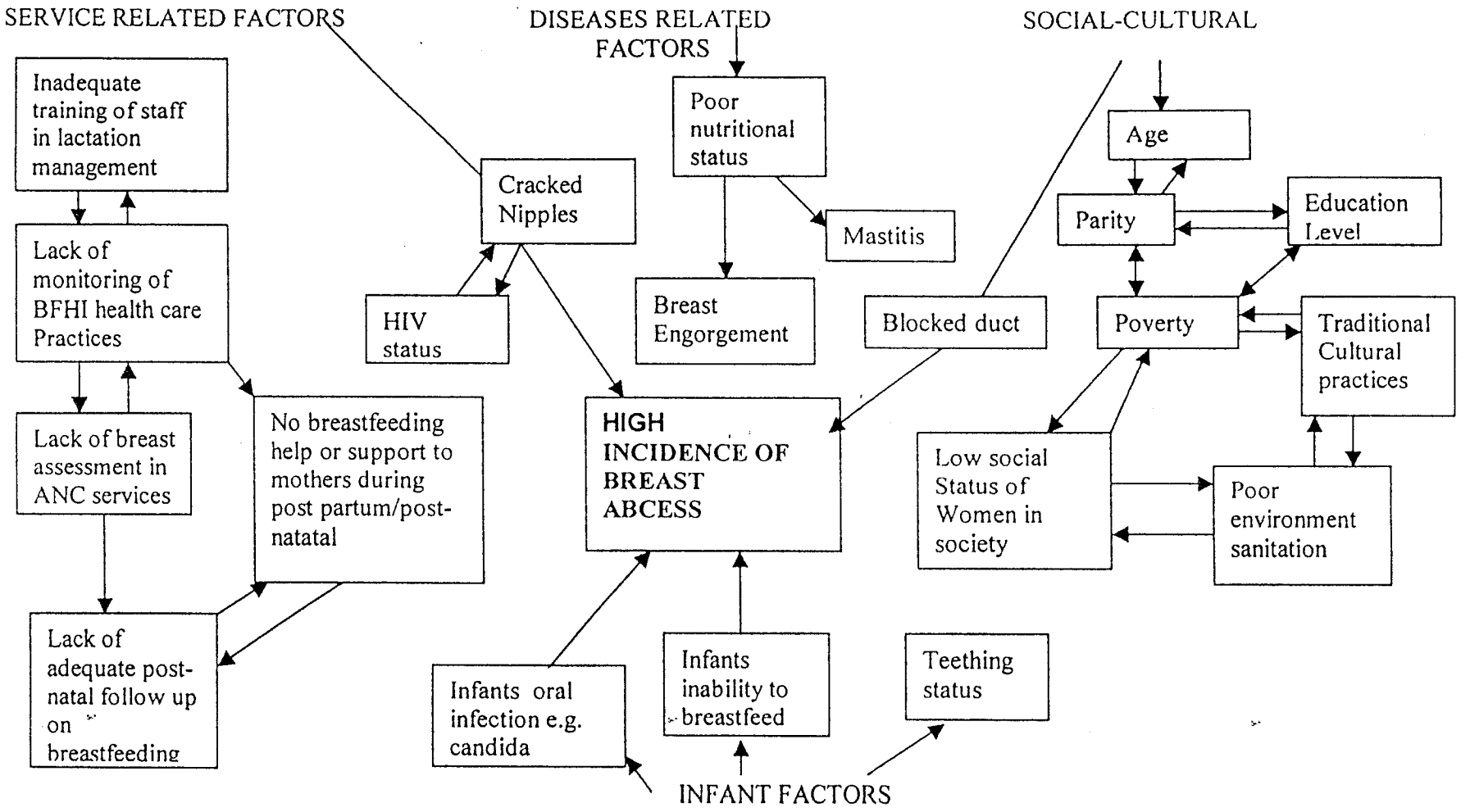
1. Breast abscesses were found to occur more frequently among first time mothers and mothers of low socio economic status between the ages of 15-25 years.
2. Common breast conditions experienced by breastfeeding mothers were cracked nipples, breast engorgement and mastitis. A combination of the above breast conditions was also found to be common.
3. Staphylococcus aureus was identified as the most common organism isolated from breast abscesses.
4. HIV prevalence among mothers presenting with breast abscesses was found to be 63.4%.

7.2. RECOMMENDATIONS

Based on the findings of the study the following recommendations are made:

1. A cohort study on factors contributing to development of breast abscess must be conducted among the population of breast feeding mothers.
2. Efforts to improve breast care and breast-feeding practices must be intensified through promotion of the Baby Friendly Hospital Initiative (BFHI) which is aimed at protecting promoting and supporting mothers to breastfeed optimally.
3. Maternity Units and MCH Services must implement a system of recording on breast conditions and the status of breastfeeding as part of post partum/post natal care routine practice.
4. Exclusive breastfeeding must be urgently addressed in the context of a large population of unknown HIV status.
5. There is need for continuing education in lactation management for all health care staff especially those in contact with mothers and infants in the service delivery system, Schools of Medicine, Nursing and other health sciences.

BREAST ABSCESS PROBLEM ANALYSIS ORGANOGRAM



EFERENCES

1. Amir LH. (1991). Candida and the lactating breast : Predisposing factors. Journal of Human Lactation 7 (4): 177-181.
2. Applebaum RM. (1970). The modern management of successful breastfeeding. Pediatric Clinics of North America, 17(1):203-225.
3. Constadius A. et al. (1999). Influence of infant feeding patterns on early mother transmission of HIV-1 in Durban, South Africa : a prospective study. Lancet, 354:71-76.
4. Creasy RK, Resnik R. (1984). Maternal and fetal pathophysiology: principles and practice. Philadelphia, W.B Saunders; 628.
5. Dever J. (1992). Masititis: positive interventions. Midwifery Today, 22:22-25.
6. Dixon JM, Mansel RE. (1994). ABC of breast diseases, symptoms, assessment and guidelines for referal, British Medical Journal, 309(6956): 722-726.
7. Eschenbach DA. (1983). Acute postpartum infections. Emergency Medical Clinics of North America, (1):87-115.
8. Evans M, Head J. (1995). Mastitis incidence, prevalence and cost, breastfeeding reviews, 3(2): 65-72.
9. LINKAGES. (1999). Frequently asked questions on breastfeeding and HIV/AIDS. From LINKAGES project. LINKAGES academy for education development, 1825 Connecticut Ave NW. Washington.
10. Fulton AA. (1945). Incidence of puerperal and lactation mastitis in an industrial town. British Medical Journal, I:693-696
11. Gibberd GF. (1963). Sporadic and epidemic puerpural breast infections: a contract in morbid anatomy and clinical signs. American Journal of Obstetrics and Gynecology 1963, 65(5): 1038-1041.

12. Glazener CMA, MacArthur C, Garcia J. (1995). Postnatal care: Time for change. England Journal of Medicine, 332:117-118.

13. Gupta R, Gupta AS, Duggal N. (1982). Tubercular mastitis, international surgery, 67(4 suppl):422-444.

14. Gunther M. (1958). Discussion on the breast in pregnancy and lactation. Proceedings of the Royal Society of Medicine , 51 (Section of General Practice):305-309.

15. Inch S, Fisher C. (1995). Mastitis: infection or inflammation? Practioner, 239(1553): 472-476.

16. John G, Nduati R, et al. (1999). Correlates of perinatal HIV-1 transmission in the Kenyan breastfeeding study. Abstract 13 ET5-1 Xith International Conference on AIDS and STDs in Africa, September 1999, Lusaka, Zambia.

17. Jonsson S, et al. (1994). Mastitis today: incidence, prevention and treatment. Annales Chirurgiae Et Gynaecologiae. Supplementum, 208:84-87.

18. Kuhn L, Stein Z. (1995). Mother to infant HIV transmission. Paediatrics Perinatal Epidemiology, 9 (1):1-29.

19. Kaufmann R, Foxman B. (1991). Mastitis among lactating women: occurrence and risk factors, Social Science and medicine, 33(6):701-705.

20. La Leche League International. (1991). Engorgement reconsidereed breastfeeding. Abstrat: News letter for local professionals, 11(1):1-2.

21. Larson E. (1988). A causal link between hand washing and risk of infection? Examination of the evidence. Infection control, (1):28-36.

22. Leany EG. (1948). Acute puerperal mastitis: a review. California Medicine, 68:147-151.

23. Livingstone VW. (1990). The treatment of Staphyloccocys Aureus infected nipples: a randomized comparative study. Journal of Human Lactation, 6(3):117-121.

24. Lusaka Urban District Health Management Board (1999): Taking services as close to the family as possible in the new millenium. Action Plan for the year 2000. Lusaka,, DHMT.

25. Marshall BR, Hepper JK. (1975). Sporadic puperal mastitis: An infection that need not interrupt lactation. Journal of the American Medical Association, 233(13):1377-1379.

26. Marmet C, Shell E, Marmet R. (1990). Neonatal frenulotomy may be necessary to correct breastfeeding problems. Journal of Human Lactation, 6(3):291-300.

27. Mctiernan A, Thomas DB. (1986). Evidence for a protective effect of lactation on risk of breast cancer in young women: results from a case control study, American Journal of Epidemiology, 124:353-358..

28. MoH, CBoH. (1990). HIV/AIDS in Zambia, background projections, impacts and interventions, September. Lusaka, MoH, CBoH.

29. MoH, UNFPA, CBoH, UNZA. (1998). A study of factors associated with Maternal mortality in Zambia. Lusaka, MoH, UNFPA, CBoH, UNZA.

30. Montgomery TL, et al. (1959). A study of staphylococcal colonization of postpartum mothers and newborn infants. Comparison of central care and rooming in. American Journal of Obstetrics and Gynaecology, 78:1227-1223.

31. Myles MF. (1996). Text book for mid wives Edinburg, Churchhill: 517-518.

32. Newton M, Newton N. (1950). Breast abscess: a result of lactation failure. Surgery, Gynaecology and Obstetrics, 91:651-655.

33. NFNC, UNICEF. (1997). Evaluation Report on of BFHI Activities in Zambia. Lusaka, NFNC, UNICEF.

34. Nduati R, et al. (2000). Effect of breastfeeding and formula feeding on transmission of HIV-1 : a randomized clinical trial. Journal of the American Medical Association, 283 (9):1167.

35. Niebyl JR, Spence MR, Parmley TH. (1978). Sporadic (non endemic) puperal mastitis. Journal of Reproductive Medicine, 20(2):97-100.

36. Prentice A, Prentice AM. (1984). Unilateral breast dysfunction in lactating Gambian women. Annals of Tropical Paediatrics, 4(1):19-23.

37. Riodan JM, Nichols FH. (1990). A descriptive study of lactation mastitis in long-term breastfeeding women. Journal of human Lactation, 6(2):53-58.

38. Thomsen AC, Espersen T, Maigaard S. (1984). Course and treatment of milk stasis, noninfectious inflammation of the breast, and infectious mastitis in nursing women. American Journal of Obstetrics and Gynecology, 149(5):492-495.

39. UNICEF. (1990). The state of the world's children education. New York, UNICEF.

40. UNDP. (1998). Report: Human development. Lusaka, UNDP.

41. University Teaching hospital Records unpublished 1999-2000. Lusaka, Zambia

42. WHO. (1996). Mother-baby package: implementing safe motherhood in countries. Geneva, WHO.

43. WHO. (1998). Postpartum care of the mother and newborn: A practical guide, Report of a technical working group. Maternal and newborn health safe motherhood unit. Division of reproductive health (Technical Support). Geneva, WHO.

44. WHO, UNICEF. (1988). Protecting, promoting and supporting breastfeeding; the special role of maternity services, a joint WHO/UNICEF statement. Geneva, WHO.

45. WHO. (2000). Mastitis on causes and management. Geneva, WHO.

46. CSO. (1996). The evolution of poverty in Zambia 1991-1996. Lusaka, Zambia.

47. CSO, Macro Int. (1996). Zambia Demographic and Health Survey. Calverton, Maryland, USA. CSO, Macro Int.

48. ZHDR. (1998). The Zambia Human Development Report. Lusaka, ZHDR.

APPENDIX I

Serial No.:.....

UNIVERSITY OF ZAMBIA
SCHOOL OF MEDICINE

DEPARTMENT OF COMMUNITY MEDICINE

A QUESTIONNAIRE STUDY: FACTORS CONTRIBUTING TO DEVELOPMENT OF BREAST ABSCESSES AMONG BREASTFEEDING MOTHERS AT THE UNIVERSITY TEACHING HOSPITAL (UTH) FEMALE CASUALTY WARD

INSTRUCTIONS

(a) Answer all questions
(b) Tick/circle against the correct answer or write as asked.

Date of interview...../..../99

SECTION A: DEMOGRAPHIC DATA

1. Name of respondent.....

2. Age of respondent.....years

3. Residential addres 1=Low, 2=Medium, 3=high

4. Marital status: 1=Married, 2=Separated, 3= Divorced, 4= Widow, 5= Single

5. Educational level 1= No education, 2= 4 years education, 3= 7 years education, 4=9 years education, 5= 12 years education (6) Other specify.....

6. Occupation: 1= Not working, 2= Housewife, 3= Regular employment, 4= Dependant

7. Household income per month: 1= K50,000, 2= 100,000, 3= K150,000, 4= K200,000, 5= K250,000, 6= K300,000, 7= K350,000 and above

8. Religion (Denomination): 1 = Catholic, 2=United Church of Zambia (UCZ), 3= Seventh Day Adventist, 4=Watch Tower, 5= Evangelical, 6=Other specify

Serial No.:.....

SECTION B. OBSTERICAL HISTORY

9. Parity.....

10. Gravida.....

11. Date of delivery.....

12. Health facility of ante-natal care:
1= Hospital, 2= Clinic, 3= Private hospital, 4= No ante-natal care

13. Place of delivery: 1= Hospital, 2= Clinic, 3= Home

14. Number of ante-natal visits.....

15. Mode of delivery: 1= Spontaneous vaginal delivery, 2= Caeserean section, 3= Assisted delivery

SECTION C

PREPARATION FOR AND MANAGEMENT OF BREASTFEEDING DURING THIS LAST ANTENATAL CARE VISITS AND FOLLOWING DELIVERY

---

16. Did you have breast examination during ante-natal care? 1= Yes, 2= No

17. Did you have health education on:

(a) Breast care 1= Yes, 2= No

(b) Common causes of breast problems associated with breastfeeding
1= Yes, 2= No

© Prevention of common breast problems associated with breastfeeding

18. Did you receive health education on the importance of correct skills for:-

(a) For positioning and attachment of the baby for breastfeeding?
1= Yes, 2= No

(b) expression of breast milk? 1= Yes, 2 = No

19. Were you helped to initiate breastfeeding soon after birth? 1= Yes, 2= No

20. Were you shown and helped to correctly position and attach the baby to breast following

delivery and before discharge from your health facility? 1= Yes, 2= No

21. Were you shown how to correctly express breastmilk and following delivery and before discharge from the health facility? 1= Yes, 2= No

22. Were you informed on the importance of emptying full breasts between the feeds or and after the feeds following delivery and before discharge from your health facility. 1= Yes, 2= No

SECTION D

MOTHER S HEALTH STATUS PRIOR TO CURRENT BREAST ABSCESS

23. Did you have ill health during this last pregnancy? 1=Yes, 2=No

24. If yes, what was the health problem?

(1) Malaria
(2) General ill health
(3) Anaemia
(4) Other specify.....

25. Have you been ill since this last delivery? 1=Yes, 2=No

26. If yes, what was the health problem?

(1) Malaria
(2) General ill health
(3) Anaemia
(4) Other specify.....

27. Have you ever had any of the following breast conditions during this breastfeeding period?

(a) Cracked/sore nipples
(b) Breast engorgement
© Mastitis
(d) Other specify.....

28. In your opinion, what is the cause of your breast abscess. 1=Sour breastmilk 2=engorged breast, 3=Other, specify

SerialNo.:.....

SECTION E

INFORMATION OF INFANT

29. Age of the baby.....(in months)

30. Sex of baby: 1=Male, 2=Female

31. Birth order of the baby.....

32. Baby s birth weight in kilogram.....

33. Infant feeding: 1=Exclusive breastfeeding, 2=Partial breastfeeding, 3=Complementary and breastfeeding, 4=Complementary and formula feeding, 5=Fully on family and food feeding

34. Has the baby suffered from any health problems since birth? 1=Yes 2=No

35. Has the baby got teeth: 1=Yes 2=No

36. If yes, what did the baby suffer from: (1)Jaundice 1=Yes, 2=No
2=Diarrhoea, 1=Yes 2=No , (3)Respiratory infection 1=Yes, 2=No
(4) Oral infection 1=Yes, 2=No (5) Other, specify.....

37. Give dates when the baby fell ill.....

38. During the illness was the baby able to breastfeed adequately? 1=Yes 2=No

39. If the baby did not breastfeed adequately how did you cope with the fullbreast?

(1) Expressed breastmilk 1=Yes, 2=No
(2) Nothing 1=Yes, 2=No
(3) Other, specify.....

SECTION E

BREAST EXAMINATION

Breast Assessment	Right Breast	Left Breast
40. Cracked/sore nipple	1= Yes 2=No	1= Yes 2=No
41. Normal nipple proctraction	1= Yes 2=No	1= Yes 2=No
42. Nipple retraction	1=Yes 2=No	1= Yes 2=No
43. Tenderness	1=Yes 2=No	1= Yes 2=No

44. Breast lump	1=Yes	2=No	1= Yes	2=No
45. Candida infection	1=Yes	2=No	1= Yes	2=No
46. Engorgement	1=Yes	2=No	1= Yes	2=No
47. Mastitis	1=Yes	2=No	1= Yes	2=No
48. Abscess	1=Yes	2=No	1= Yes	2=No

49. Which breast does the baby prefer most to feed from? 1=Yes 2=No

Laborary investigations taken

50. Blood for FBC 1= Yes 2=No

51. Blood for RVT. 1= Yes 2=No

52. Swab from the breast abscess for culture and sensitivity. 1= Yes 2=No

THANK YOU FOR YOUR PARTICIPATION

SECTION F

LABORATORY RESULTS

53. FBC (i) HB: 1=Normal 1= Yes, 2=No Abnormal: 1= Yes, 2=No
(ii) WBC: Norma 1=Yes 2=Low, 3= high: 4=very high
(iii) Lymphocytosis 1=Yes 2=No
(iv) Eostnophilia 1=Yes 2=No
(v) Neutrophilia 1=Yes 2=No
(iv) ESR 1=Normal, 2=Low, 3=high 4=very high

54. Culture and sensitivity:
(i) Organisms isolated from the abscess
(a) Staphylococcal aurens
(b Streptococcus pneumoniae
© Streptococci pyogens
(d) Proteins mirabieus
(e) Other.....

55. Antibiotic sensitivity to organisms isolated
(a) oxacillin.
(b) erythromycine
© chloramphenical
(d) Cloxacillin

(e) tetracycline
(f) vancomycine
(g) ciprofloxacine

56. Antibiotic resistant to:

(a) penicillin
(b) septrin
© tetracycline
(d) Other.....

57. HIV status, seroreactive 1=Yes, 2=No

58. Comments by the physician

.....
.....
.....

Ten steps to successful breastfeeding

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

1. **Have a written breastfeeding policy that is routinely communicated to all health care staff.**

2. **Train all health care staff in skill 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. **Practise rooming –in-allow mothers and infants to remain together – 24 hours a day.**

8. **Encourage breast-feeding 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.**

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[1] From: Protecting, Promoting and Supporting Breastfeeding: The Special Role of Maternity Services
A Joint WHO/UNICEF Stated
Published by the World Health Organization, 1211 Geneva 27, Switzerland

APPENDIX III

University of Zambia
School of Medicine
Department of Community Medicine
P. O. Box 50110
LUSAKA

17 February 1999

To: Casualty Ward
- Dr Chisi - Blue Firm - Monday
- Dr F Kabwe - Green Firm - Tuesday
- Dr G Mutambo - Yellow Firm - Wednesday
- Dr C Chilufya - White Firm - Thursday
- Dr C Katwishi - Red Firm - Friday

Dear Sir,

RE: A STUDY OF BREAST ABSCESSES : FACTORS CONTRIBUTING TO DEVELOPMENT OF BREAST ABSCESSES AMONG BREASTFEEDING MOTHERS AT THE UNIVERSITY TEACHING HOSPITAL (UTH) FEMALE CASUALTY WARD SHEDULED FEBRUARY TO APRIL

With reference to the above mentioned subject and upon consultation with the Head of Department of Surgery I wish to request for support from you in the process of data collection on the days that your firm is operating.

The study is in partial fulfillment for the degree of Master of Public Health (MPH) academic year 1997/98.

The data collection involves the following details:

1. Sample size of 130 breastfeeding mothers with breast abscesses.
2. Criteria for inclusion in the study is breastfeeding mothers with breast abscesses.
3. Data Collection will be on daily basis.
4. Those recruited in the study will need
   - ☐ general examination
   - ☐ breast examination of both affected and unaffected
   - ☐ blood for HIV and FBC
   - ☐ Swab/pus from affected breast for culture and sensitivity
   - ☐ Reviewed once following incision and drainage
5. In order to fulfill the disired sample size it will be necessary to collect data on daily basis. In this regard all firms will be involved.

6. A questionnaire to fill in for clients and a review clinic card will be made available.
7. Materials for laboratory testing and other logistics will be made available

Please be informed that permission from the Head of Surgery and Heads of various firms has been granted.

Your assistance will be most appreciated.

MK Chintu

Mwate K Chintu
MPH POSTGRADUATE STUDENT

cc. Head, Blue Firm
Head, Green Firm
Head, Yellow Firm
Head, White Firm
Head, Red Firm

APPENDIX IV

University of Zambia
School of Medicine
Department of Community Medicine
LUSAKA

5 January 1999

The Managing Director
University Teaching Hospital (UTH)
P. O. Box 50001
LUSAKA

Dear Madam

RE: PERMISSION TO CONDUCT RESEARCH AT THE UNIVERSITY TEACHING HOSPITAL (UTH) FEMALE CASUALTY WARD. A STUDY OF BREAST ABSCESSES : FACTORS CONTRIBUTING TO DEVELOPMENT OF BREAST ABSCESSES AMONG BREASTFEEDING MOTHERS SCHEDULED JANUARY 10 - MARCH 10, 1999

With reference to the above mentioned subject I wish to inform you that the Research Ethics Committee for post graduate studies approved the above mentioned study in partial fulfillment for the degree of Master of Public Health (MPH) academic year 1997/98.

The study will comprise of a sample of 130 breastfeeding mothers with breast abscess. The results of the study will greatly contribute the efforts being made by the Baby Friendly Hospital Initiative (BFHI) and the National Breastfeeding Programme as a whole.

In view of the study being at your institution, permission to conduct the research is being requested from your management.

Your consideration will be greatly appreciated.

Yours faithfully

M.K. Chintu

Mwate K. Chintu
MPH STUDENT

cc. Director of Nursing Services - UTH
Head, Community Medicine
MPH Coordinator

APPENDIX V

School of Medicine
Department of Community Medicine
University of Zambia
P. O. Box 50110
LUSAKA

19 April, 2000

The Director
Lusaka District Health Management Team
Makishi Road
LUSAKA

ATTENTION: DR. KABASO

U.F.S: Head, Community Medicine 19/4/2000

Dear Sir,

RE: REQUEST FOR 1998-1999 STATISTICAL DATA ON MATERNAL AND CHILD HEALTH IN LUSAKA URBAN DISTRICT.

As a follow up of our brief discussion regarding my research proposal, I hereby request for permission to collect information on the status of maternal and child health in your district for the year 1998-1999.

I am currently pursuing a Masters degree programme in Public Health at the University of Zambia, School of Medicine, Department of Community Medicine. As a part of partial fulfilment of the programme I am writing up a report of my research on breast abscess among breastfeeding mothers in which I need information on maternal and child health.

The information required includes: number of deliveries, ante-natal attendances and average number of visits, post natal attendance, common causes of maternal morbidity and mortality data and any relevant information.

Your assistance will be greatly appreciated.

Yours faithfully,

Mwate K Chintu
MPH GRADUATE STUDENT

Figure 1: Engorged breast. Age 18 years. Parity 1. HIV status negative. HB 11.9. Educational level 7 years. Infantimage 2 weeks.

Figure 2: Mastitis. Age 18 years. Parity 1. HIV status negative. HB 11. Educational level 7 years. Infantimage 9 days.

Figure 3: Blocked Duct. Age 20 years. Parity 2. HIV status, positive. HB 10. Educational level 7 years. Infantimage 3 weeks.

Figure 4: Untreated Mastitisk Breast Abscess. Age 20. Parity 2. HIV Status positive. HB 10. Educational level 7 years. Infantmage 6 weeks.

Figure 5: Incision and drainage. Age 24. Parity 4. HIV status negative. HB 12. Educational level 7 years. Infantmage 8 weeks.

Figure 6: Candida infection. Age 25 years. Parity 3. HIV status positive. HB 9.7. Educational level 7 years. Infantmage 3 weeks.

Figure 7: Candida infection. Age 19 years. Parity 2. HIV status, negative. HB 12.6. Educational level 7 years. Infantmage 7 weeks.

Figure 8: Infected Candidiasis. Age 22 years. Parity 2. HIV status positive. HB 11. Educational level 7 years. Infantmage 8 weeks.

Figure 9: Healing Candidiasis. Age 30 years. Parity 2. HIV status positive. Educational level 7 years. HB 10. Infantmage 2 weeks.

Figure 10: Inverted nipple. Age 20 years. Parity 2. HIV status unknown. Educational level 7 years. Infantmage 5 days.

Figure 11: Fissured nipple. Age 16 years. Parity 1. HIV Status unknown. Educational level 7 years. Infantmage 2 days.

Figure 12: BFHI. Age 18. Parity 1. Infants age 5 minutes. Skin to skin contact. Early initiation to breast feeding

Figure 13: BFHI. Skin to skin contact early initiation to breast