BREAST MILK EXPRESSION PRACTICE AND FACTORS AFFECTING IT AMONG MOTHERS OF PRETERM AND LOW BIRTH WEIGHT NEONATES ADMITTED TO NEONATAL INTENSIVE CARE UNIT OF GOVERNMENT HOSPITALS IN ADDIS ABABA, ETHIOPIA, 2020.

BY MISGANA HIRPHA

RESEARCH THESIS SUBMITTED TO DEPARTMENT OF NURSING, COLLEGE OF HEALTH SCIENCE ADDIS ABABA UNIVERSITY, IN PARTIAL FULFILLMENT OF THE REQUIREMENTS OF MASTER'S DEGREE IN NEONATAL NURSING

JULY, 2020

ADDIS ABABA, ETHIOPIA

ADDIS ABABA UNIVERSITY

COLLEGE OF HEALTH SCIENCES

SCHOOL OF NURSING & MIDWIFERY

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JULY, 2020

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APPROVAL BY THE BOARD OF EXAMINATION

This thesis by Misgana Hirpha is accepted in its present form by the board of examiners as satisfying thesis requirement for the degree of masters in neonatal Nursing.

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ACRONYMS AND ABBREVIATIONS

AAHB	Addis Ababa Health Bureau
AAU	Addis Ababa University
ANC	Antenatal Care
AOR	Adjusted Odds Ratio
BFHI	Baby-Friendly Hospital Initiative
BPD	Broncho-Pulmonary Dysplasia
CI	Confidence Interval
COR	Crude Odds Ratio
DBM	Donated Breast Milk
EBM	Expressed Breast Milk
E.C	Ethiopian Calendar
EHMD	Exclusive Human Milk Diet
GA	Gestational Age
GMH	Gandhi Memorial Hospital
HMIS	Health Management Information System
IBCLC	International Board Certified Lactation Consultant
IgM	Immunoglobulin M
IQ	Intelligent Quotient
LBW	Low Birth Weight
LOS	Let Onset Sepsis
KMC	Kangaroo Mother Care
MOM	Mothers Own Milk
NEC	Necrotizing Enterocolitis

NICU	Neonatal Intensive Care Unit
NPO	Nil Per Os (nothing by mouth)
PIH	Pregnancy Induce Hypertension
ROP	Retinopathy Of Prematurity
TASH	Tikur Anbessa Specialized Hospital
VLBW	Very Low Birth Weight
ZMH	Zewditu Memorial Hospital

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ABSTRACT

Background: World Health Organization recommends that breastfeeding should start within the first hour of birth in term and within the first six hours for preterm by expressing breast milk. In early preterm and very low birth weight breast milk expression is an optimal solution to continue with breastfeeding.

Objective: The aim this study was to assess breast milk expression practices and factors affecting it among mothers of preterm and low birth weight infants in NICUs of government hospitals in Addis Ababa.

Methods and materials: Facility-based cross-sectional study was conducted on a total of 124 mothers who were in NICU selected sequentially. Pretested structured questionnaire was used to collect data and the collected data were coded, entered, and cleaned using Epidata version 4.6.0.2 then exported to SPSS version 26 for analysis. Odds ratios along with 95%CI were estimated to identify factors affecting breast milk expression practice using logistic regression analysis. Level of statistical significance was declared at p-value ≤ 0.05.

Results: The magnitude of late initiation of breast expression, inadequate frequency and inadequate volume were 100%, 40.3% and 33.9% respectively. Getting instruction on method of their choice (AOR=0.55; CI=0.31 to 0.96) and gestational age ≤32 weeks (AOR=2.39; CI=1.34 to 4.24) were factors significantly associated with initiation milk expression. Stable health status of baby (AOR=0.11; CI=0.01 to 0.83), fair (subcritical) health status of baby (AOR=0.07; CI=0.01 to 0.55), were facilitators of adequate amount of milk; and worry about volume milk (AOR=7.50; CI=3.32 to 16.95) and worry about health status of baby (AOR=4.63; CI=2.21 to 9.70) were significantly affect the volume of expressed breast milk.

Conclusions: The present study indicated practice of early initiation of milk expression was poor. In order to promote good practice breast milk expression among mothers of preterm and low birth weight inter-departmental collaboration is required.

Keywords: breast milk expression, preterm, low birth weight, NICU

CHAPTER 1

INTRODUCTION

1.1. Background

WHO recommends that breastfeeding should start within the first hour of birth, that all infants should be exclusively breastfed from birth to six months of age, and should continue until 2 years or beyond with complementary feeding(1). Mothers own milk is the optimal milk for term and preterm infants. Human milk is a fresh, living food with many antioxidant, antibacterial, prebiotic, probiotic, and immune-boosting properties in addition to nutrients(2). Probiotics have protective effect against NEC(3).

However, due to reasons like, born preterm, critically ill infants may not feed directly on breast. To be able to feed orally, a preterm infant must be able to synchronize sucking and swallowing with breathing. They have poor coordination of sucking and swallowing because of neuronal immaturity, and have decreased oromotor tone, generating lower intraoral pressures during sucking. Full oral feeding can be achieved by most infants at 34 to 36 weeks of gestation (4). In such circumstance newborns have to get expressed breast milk that can be supplemented by enteral feeding or drop of milk by syringe (5).

Milk expression is removal of breast milk from a mother's breast when the infant cann't suck at breast due different reasons. Hand expression and pumping are methods of milk expression that are device to express milk. It is more helpful in early neonatal period to collect drop of colostrum and press-compress-release technique is used to effectively express enough amount of milk. Again in this method pressure is used to release milk from the ducts(6).

In other hand, breast pumping is a method of milk expression that always need pumping device that can generate vacuum. breast pumping classified into two based on type of device used to generate vacuum. These are electric powered pumping and manual pumping. AS the name indicates electric powered uses electric powere to generate vacuum similar to that generated when the neonate suck at the nipple. Whereas manual pumping needs hand compression of the device to generate vacuum.

Even though Mother's own milk (MOM) is the best form of nutrition for preterm infants and low birth weight infants(7), initiation of breast milk feeding within one hour is affected by different factors. Among these factors mode of delivery, educational status of the mother, poor latching (preterm and very low birth weight infants) were significantly affect early initiation (8, 9). The other reasons of delayed initiation of breastfeeding are lack of milk, ill child and the baby get sleep(10).

The practice of breast milk expression is a method used to establish and to maintain lactation when there is difficulty like preterm and low birth weight infants. The time to start expressing, frequency of expression and volume of expressed milk are important aspects to establish and maintain lactation. In NICU mothers of preterm and low birth weight infants complain inadequate volume of expressed milk and there is also a consideration of formula milk to fulfill the requirement volume of milk. To assess the practice and factors affecting breast milk expression in neonatal intensive care unit (NICU) this study was conducted in Addis Ababa government hospitals.

1.2. Statement of the problem

Globally among live births born annually about 15 million are born premature before 37 completed weeks. Direct complication of preterm birth accounts one million death each year, and preterm is risk factor for neonatal death(11). Born preterm is one factor for suboptimal breast feeding. Suboptimal breast feeding is responsible for 11.6% of underfive deaths globally per year(11).

Breastfeeding reduces a large variety of health problems in early childhood, including the risk of acute otitismedia, nonspecific gastroenteritis, severe lower respiratory tract infections, atopic dermatitis, asthma (young children), obesity, possibly type 1 and 2 diabetes, childhood leukemia and necrotizing enterocolitis (12). So WHO recommends in baby friendly hospital initiative states "Show mothers how to breastfeed and how to maintain lactation even if they should be separated from their infants."

But for some mothers feeding expressed milk is new concept and some have negative attitude toward it. Some of the mothers compared the process of expressing milk to milking a cow and did not wish to try it. Whereas, some mother believe practices of expressing and discarding milk only when the mother or baby is ill, to relieve discomfort from engorgement or when the baby is died (13).

Mothers of very low birth weight (VLBW) infants often have difficulty achieving lactation success and are less likely to initiate and more likely to discontinue breastfeeding earlier than mothers of term infants. This because VLBW infants have difficulty of sucking at breast early after delivery which can lead to delay of lactogenesis II. However breast milk expression can minimize this problem if initiated early and expressed frequently.

Very low birth weight newborns are protected from different health problems by feeding their own mother's milk. They are at decreased risk of feeding intolerance, late onset of sepsis, necrotizing enterocolitis (NEC) and decreased hospital stay. But mothers of VLBW infants often have difficulty of achieving lactation success because they do not initiate expression early within one hour following delivery (14). This leads to formula feeding which increase the risk of necrotizing enterocolitis among preterm and low birth weight infants (14, 15). Preterm infants who receive human milk instead of formula are less likely to develop NEC(16). Despite of this, majority of VLBW infants discharged on formula feeding from neonatal intensive care unit (NICU) (17).

Babies who are not breastfeed are more likely to suffer infectious diseases such as gastroenteritis, respiratory disease, and otitismedia (middle-ear infections) leading to increased hospitalization, morbidity, and mortality. Children who have not been breastfed have increased risk of childhood diabetes and obesity, and increased risk of dental disease(18). In addition, there is evidence of an adverse impact of not being breastfed on intelligent quotient (19), and educational and behavioral outcomes for the child. For preterm babies, a diet of exclusive breast milk reduces the incidence of necrotizing enterocolitis a disease of the gastrointestinal tract of premature infants those results in inflammation and bacterial invasion of the bowel wall.

Preterm and very low birth weight infants exposed for short and long term complications during their life span. As short term problem hospitalization for long period of time which is directly associated with preterm and very low birth weight. In addition to this morbidities related to preterm and VLBW increases the costs health(20).

Human milk has direct and indirect effect in reduction of preterm and VLBW associated costs. By reducing the risks and the associated costs of late onset sepsis and necrotizing enterocolitis (NEC) in NICU human milk feeding directly reduce the cost (21). As well as it prevents long term complication like BPD and ROP decreases costs related readmission to treat these long term complications. But when MOM is insufficient the cost of formula milk increases(22).

The consumption of breast milk among preterm and low birth weight infants is full of challenge because of difficulties in direct breast feeding. Expressed breast milk is best option used to initiate lactation and maintain milk supply when there is difficulty of breast feeding. Moreover, breast milk expression optimize the benefit newborns get from colostrum and to minimize hospital stay by increasing the consumption of mothers own milk. But the practice of breast milk expression among mothers of preterm and low birth weight is not as much as its benefit in different parts of the world because of different factors. In Ethiopia there is limited data that indicate about practice breast milk expression among mothers' of preterm and low birth weight admitted to NICU, so this study was assessed the practice of breast milk expression and factors affecting it among mothers of preterm and low birth weight admitted NICU.

CHAPTER 2

LITERATURE REVIEW

2.1. Overview of breast milk

Human milk is an optimal nutrition for term and preterm infants. Specially for very low birth weight infants it help to achieve potential growth and help to ensure good health and normal neurological development(23). According to the study conducted in USA exclusive human milk diet (EHMD), reduces mortality and saves cost by reducing adverse clinical events in VLBW infants (24). Colostrum contains immunoglobulin, like immunoglobulin A (25), immunoglobulin G (26) and immunoglobulin M (IgM) which protects against infection. It also contains growth factors that helps the babies gut to mature. In addition it also has enzymes and cytokines. Along with that, colostrum also has laxative effects that help newborn to excrete the excess bilirubin and aid to pass the stool.

Human milk provides protective benefit against health problems associated with born premature like; NEC, let onset sepsis (LOS) and retinopathy of prematurity (25). So to decrease cessation of breastfeeding due to longer length of stay in NICU breast milk expression is helpful. Feeding preterm and very low birth weight infant early small quantities of enteral nutrition (trophic feedings), improves both gastrointestinal structural and functional development in cesarean section and preterm delivery lactogenesis-II production is delayed. In such situation early breast milk expression has similar role like early initiation of breastfeeding in long term exclusive breastfeeding.

2.2. Benefits breast milk expression

Breast milk expression increases milk supply if started early after birth so that mothers continue exclusive breast feeding which the problem several mothers. As concern of milk supply several mothers stop breast feeding with first six months after birth (27).

Human milk is more favor for intestinal microbiome and have potential long term effect on intestinal functionality, immune system and metabolic activity (28, 29). Preterm infants feed on

breast milk achieve growth mile stones earlier than formula feed infants (30). But preterm infants born to mothers who experience difficulties in pumping breast milk are at higher risk to feed with formula(31).

Predominant breast milk feeding in the first 28 days of life is associated with brain development and neurocognitive outcomes. The study conducted among participants of Victorian infants in royal women's hospital and royal children's hospital showed infants received >50% breast milk are associated with greater deep nuclear gray matter volume at term equivalent and with better performance at age 7 years of age on IQ, mathematics, working memory, and motor function tests(32).

Oro-pharyngeal administration of colostrum which is obtained by expressing breast milk when there is difficulty of direct breast feeding can decrease clinical sepsis. The study conducted in Korea indicates that Urinary levels of secretary immunoglobulin A at 1 week and 2 week, and lactoferrin at 1 week were significantly higher in colostrum group. It also indicates significant reduction in the incidence of clinical sepsis in colostrum group(33).

Benefits of breast milk for premature infant is the medical therapy that can't replaced by pharmaceutical products. It is easily digestible and protects premature infants from infection. There is evidence that people who were breastfed perform better in intelligence tests. But the problem is early premature and sick infants are not strong enough to suck directly on breast. So support in initiating milk expression early in the hospital course will help to increase the likelihood of achieving full breast milk feeding(34, 35) and it is helpful in initiating early trophic feeding. Early trophic feeding has strong support to gain weight, decrease time on parenteral nutrition, shorten the length of hospital stay(36). In addition expressed breast milk can be used to reduce procedural pain when compared to other mechanisms (25% dextrose solution) (37).

2.3. Practice of breast milk expression

2.3.1. Initiation breast milk expression

Lactation initiation and maintenance is more complicated for preterm infants' mothers. Milk production (lactogenesis II) has to be initiated by expression, because at-breastfeeding is not possible due to infants' immaturity and medical condition. Early initiation of regular breast milk expression, is useful intervention for mothers at risk of early-onset breastfeeding failure lactogenesis II established by day 3. However early initiation of breast feeding is low among

mothers who give birth by cesarean section, preterm and low birth weight. Only 3.3 % mothers' of preterm neonate were start breast expression within one hour after delivery in the study conducted in North India(38).

In Finland a study conducted among mothers of sick and preterm infants revealed that only one third of them have adequate expression practice. Only half of them exclusively feed their own milk. This indicates inadequate milk expression practice in this study (39). Another cross sectional study conducted in this area revealed that 36% mothers start breast milk expression within six hours following delivery (40), whereas the study done in Japan showed only 17% mothers start milk expression within six hours following delivery. The median time of initiation in the second study was 20 hours(41).

2.3.2. Frequency of breast milk expression

About 80% of mothers' of preterm neonates express at least 8 times in 24 hour including during night(38). This helps to increase milk volume as milk production is directly associated with the frequency of expression. According to the study done in Western Australia the daily milk production was associated with frequency of breast expression among mothers of preterm infants (42).

2.3.3. Volume of expressed milk

Study done in North Korea showed that breast milk was not sufficient to full fill the requirement of baby throughout 10 days and formula milk was added to meet the requirement. Only 48% mothers were able to express the amount of milk as per the requirement of baby. Mothers of preterm neonates require health education on expression of breast milk, amount of expressed breast milk feeding is very less as compare to enteral feed calculated(38).

2.4. Factors affecting breast milk expression practice

2.4.1. Socio-cultural factors

Method of milk expression has effect on breast milk expression practice. As the study conducted in UK showed using double pumping was significantly increase milk production when compared to single pump. Using double pump was the most significant predictors for milk volume among mothers' of preterm infants(43). The use of double pump has positive effect on the volume

expressed breast milk for preterm infant in NICU. Study in United Kingdom revealed that the use of double pump rather than single pump increase the volume of expressed breast milk(43). Mothers' previous NICU experience is associated with time of initiation breast expression. Study done in Finland showed mothers' previous NICU experience was risk factor for late initiation of breast milk expression (40). In contrary to this another study indicated that previous NICU experience as facilitator of early initiation of breast milk expression among mothers' of preterm infants admitted to NICU(39).

According to the study conducted in northern health region of Portugal the knowledge of mother about human milk contribution to infants' growth and well being, and parents' knowledge about benefit of breast feeding were facilitators of milk supply among mothers of preterm neonates in NICU. Half respondents reported that its contribution to growth and wellbeing of the infant as facilitator of milk supply. Whereas 27.6% of them reported parent's knowledge about benefit of breast feeding was facilitator of breast milk supply(44).

Support from the staff has positive effect on the improvement in milk expression practice of mothers who had preterm infants. Counseling is one of support given to mothers when they get preterm baby and at risk to give birth of preterm infant during antenatal care follow up (45). In India one pilot project revealed that mothers of preterm neonates require health education on expression of breast milk, amount of expressed breast milk feeding is very less as compare to enteral feed calculated(38).

In the study conducted in level II and level III NICU in United States low social support is associated with low breast milk expression during hospitalization (46).The recognition and praise mothers motivates them to continue pumping. This can be support from family members, friends, church members, and hospital staff (47).

Mothers should be coached on how to express breast milk as a means of maintaining lactation in the event of their being separated temporarily from their infants. Expression of breast milk is often a technique used to stimulate attachment and effective suckling during the establishment of breastfeeding, not only when mothers and infants are separated. A Quality Improvement Project to Increase Breast Milk Expression indicates that daily contact with the bedside nurse had a positive effect on breast milk expression rates. By engaging mothers in conversation to provide

support the daily milk volume produced can be increased. Frequent dialogues on effectiveness of breast milk expression promote breast milk expression(48).

2.4.2. Maternal comfort

Mothers whose infants are admitted to the NICU face more challenges than other mothers in initiating and sustaining breast milk feeding. This is because physical separation from infant which can hinder milk supply(44). Proximity to the baby when milk expression is associated with volume of expressed milk. Milk expression conducted to proximity of the baby is associated with higher milk volume (45). Mothers of infants admitted to the neonatal intensive care unit should be sensitively supported to enable them to have skin-to-skin contact with their infants, recognize their infants' behavior cues, and effectively express breast milk soon after birth.

In addition, the physical environment of the NICU may not be conducive for pumping, and the infant's illness may preclude oral feeding for some time. These challenges are most prominent for mothers of preterm infants; as such infants will not actually be able to breastfeed for up to several weeks until they transition from tube feedings to oral feedings(1).

Lack of privacy interfered with initiation of milk expression. This is associated with frequent interruptions and the flow of hospital staff, family, and friends interfered with their ability to learn to use the breast pump, relax during pumping, and pump frequently (47).

The use of warm breast shields when pumping milk has positive effect on breast milk pumping. The study conducted in Australia showed that using a warm breast shield effectively warmed the nipple and areola and, combined with maximum comfortable vacuum, decreases the time to remove 80% of the total milk yield. It also increases the percentage of available milk removed after 5 minutes of expression, with no change in the percentage of available milk removed after 15 minutes of expression compared with an ambient-temperature breast shield(49).

2.4.3. Neonatal factors

The study conducted in northern health region of Portugal shows mothers of extremely low birth weight infants were more likely to indicate worries of inadequate milk supply and the opportunity to hold and connect with infants help as human milk supply (44).

2.4.4. Maternal psychological factors

Worries related to inadequate milk supply hinder milk supply in NICU among mothers' preterm neonates. According to the result of this study 35.7% of them reported worries related to inadequate milk supply as barrier of human milk supply. , difficulties with expressing breast milk expression and physical separation from infants are factors that hinder milk supply in NICU. According to the study done in Portugal, mothers who delivered extremely low birth infants are more likely worries about in adequate milk supply. Educational status (≤12 years on education) is associated with difficulties of expressing milk(44).

On other hand feeling anxious and stressed are factors that distract pumping immediately during postpartum period (47). These mothers are more likely to have experienced complications in pregnancy and child birth, such as cesarean section delivery, and may be receiving medications that may interfere with breastfeeding or milk expression.

In such situation support from health profession is vital to start breast expressing as soon as possible within one hour and to continue expressing frequently 8-10 times over 24 hours including the night time is imperative. Early initiation of breast milk feeding has positive impact on the outcome of preterm infants. Those newborns who start breast milk feeding after one day of life are at increased risk of dying within 28 day of life when compared to those who start feeding within one hour after birth(1).

2.4.5. Pregnancy related maternal factors

The study conducted in china indicated that pregnancy-induced hypertension syndrome, delayed expression initiation, shorter daily sleeping time were found to be the risk factors for delayed lactogenesis II. According to this study delayed lactogenesis II is associated with lower milk volume in early postpartum period(50). Physical and mental challenges affect pumping breast during postpartum period. In a study done in North Carolina mothers who treated with magnesium and other medication during labor stated that they face difficulty in understanding pumping instruction.

Initiation of milk expression within one hour following delivery increases milk volume and decreases time to lactogenesis stage II in mothers of VLBW infants. In study done in Florida the total milk volume expressed by mothers in the early expression group during the first week is over twice that of mothers in the late expression group. Mothers in the early initiation group

attained earlier lactogenesis stage II when compared with mothers in the late initiation group (51).

The study conducted in Finland indicated that volume of expressed breast milk was associated with time of initiation and frequency. According to this study early initiation of breast expression within six hours following delivery increased amount milk when compared to those who start breast expression after six hours. Similar study also identified more frequently expression of breast per day (more than six times per day) increased amount expressed milk (38, 40).

Early initiation (within one hour after birth) of breast milk expression has significant effect on volume of breast milk. In Florida the study conducted in level III NICU among mothers who delivered an infant with a gestational age of less than 32 weeks and weighing less than 1,500 g shows that mothers who initiated to express milk within one hour after delivery produced more milk than those initiated within 1-6 hours and >6 hours. But there is no difference between those mothers initiated expressing breast milk 1-6 hours and >6 hours after delivery on breast milk produced. Early initiation of breast milk expression also decreases the time to lactogenesis stage II in mothers of VLBW infants (14).

The possible factors that can affect breast milk expression practice of mothers of preterm infants are socio-cultural factors, pregnancy related factors, neonatal factors, psychological factors and comfort of the mothers. Socio-cultural factors like, educational status of the mother, social support and health care provider support affect the volume of milk supply whereas knowledge and support from staff can affect frequency milk expression. Pregnancy related factors like pregnancy induced hypertension is possible factors that can affect milk volume and incision pain of cesarean section and being on medication can affect early initiation of milk expression. In neonatal factor the health status of the neonate can affect the volume of expressed milk. Psychological factors like worry about health status of neonate and stress also affect the volume of milk supply. Comfort mothers like relaxation, back massage, warmth shield of pump and music can affect the volume of the milk supply whereas lack privacy can affect initiation and frequency milk expression.

2.5. Conceptual framework

The possible factors that can affect breast milk expression practice (time of initiation, frequency of expression and required milk volume) are displayed in diagram with subtitle of socio-cultural factors, maternal factors, neonatal factors, psychological factors, comfort of the mothers and pregnancy related factors. The aspects in milk expression practice put in separate way to indicate possible factors that can affect each of them. All are indicated by one way arrow**.**

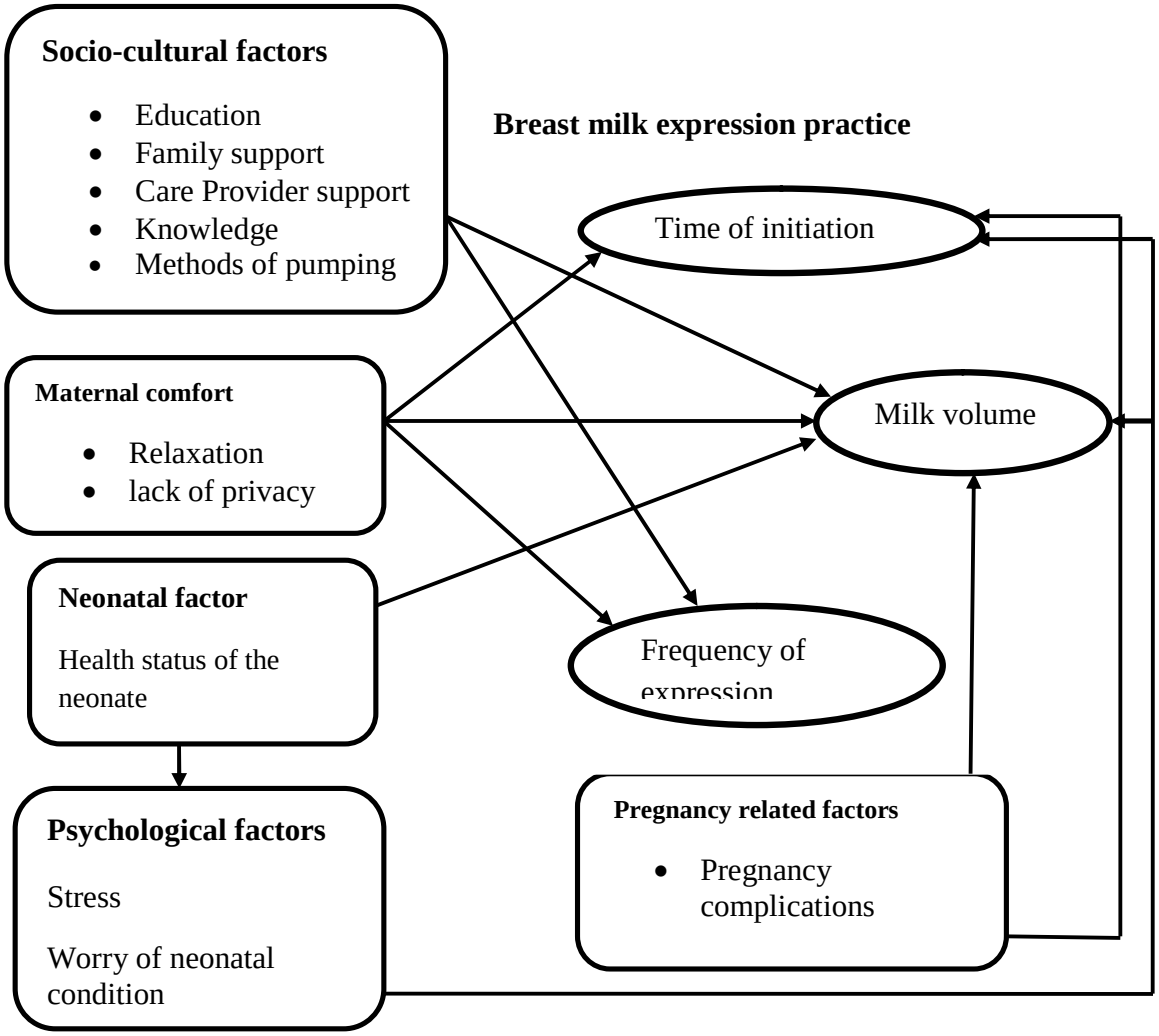


Figure 1: Conceptual framework developed from review of literatures (38, 44, 47, 49, 51, 52) on breast milk expression practice and factors affecting it among mothers of preterm and low birth weight babies admitted to neonatal intensive care unit of government hospitals in Addis Ababa, Ethiopia, 2020.

JUSTIFICATION OF THE STUDY

The aim of this study was to assess breast milk expression practice and factors affecting it among mothers of preterm and low birth weight neonates in government hospitals in Addis Ababa, Ethiopia.

There are improvements in providing intensive care service for premature infants feeding problem is one of challenges in such group of infants. To solve feeding problem of premature infants some developed countries uses parenteral nutrition and donated breast milk (DBM) as transition to direct breastfeeding. But in Ethiopia the access to parenteral nutrition and DBM at affordable cost is limited. So the sole option is to start trophic feeding and progressively increase until direct breast feeding established by expressing mothers own milk (MOM).

Even though expressing breast milk is practiced in Ethiopia, it is difficult to get required volume milk in clinical practice. For this reason premature infants either stay longer time to start full feeding or start formula milk to fulfill the required volume, which have short and long term effects on them. There is limited study on this topic; the related study available is done on exclusive breastfeeding of preterm infants at discharge. It didn't identify time of initiation and the mechanisms used in case poor latching. So assessing breast milk expression practice and factors affecting will identify the gap and used as base line information for future.

SIGNIFICANCE OF THE STUDY

The finding from this study will help as base line data for quality improvement projects, for policy makers, researchers and different level stakeholders who develop guideline on milk expression use in hospitals.

The study also identified factors that can affect breast milk expression among mothers who give preterm babies; the finding will help for antenatal care services provider and labor and delivery ward staff to educate high risk mothers. It is also used in NICU to plan and prioritize bedside education for mother of preterm babies. In general the finding will provide information that can used to reduce problems associated with initiating lactation and maintaining milk production among mothers of preterm babies in hospital.

OBJECTIVE OF THE STUDY

General objective

To assess breast milk expression practice and factors affecting it among mothers of preterm and low birth weight neonates admitted to NICUs of government hospitals in Addis Ababa, Ethiopia

Specific objectives

To assess breast milk expression practice among mothers of preterm and low birth weight neonates admitted to NICUs of government hospitals in Addis Ababa, Ethiopia, 2020.

To identify factors affecting breast milk expression practice among mothers of preterm and low birth weight neonates admitted to NICUs of government hospitals in Addis Ababa, Ethiopia, 2020.

CHAPTER 3

METHODS AND MATERIALS

3.1. Study area and period

The study was done in Addis Ababa, the capital city of Ethiopia and seat of charter of African union. It has ten sub-cities and according to the central statistics agency population projection of the city in 2020 is to be 3.6 million(53). Totally there are thirteen hospitals in the city out of these five of them governed under federal government, six of them governed under Addis Ababa city health bureau, one owned by police force and one owned by defence army. Among all government hospitals available in the city currently ten of them have NICU service.

Tikur Anbessa Specialized Hospital (TASH): was established in 1966 and located in Lideta Sub City. It has 543 beds and around 2000 patients admitted per month on average in different specialty and sub-specialty areas. Among these units neonatal intensive unit is one and in average about 3000 neonate admitted to NICU in this hospital annually of which about 40% were low birth weight(54).

Yekatit 12 hospital medical college (**Y12HMC)** was established in 1945 E.C. In this hospital NICU is one the inpatient service under child health service. Per year about 2000 newborns admitted to this unit, out of which half of them are low birth weight(54).

Zewditu Memorial Hospital (ZMH) is one of the governmental hospitals in central Addis Ababa, Kirkos Kifle Ketema. Today ZMH is operated under Addis Ababa health bureau and it has different disciplines in both inpatient and outpatient service. In its NICU annually about 1700 newborns admitted in average according to the data from health management information system (HMIS) registration. Of total admission about 32% of them are low birth weight(54).

Gandhi Memorial Hospital (GMH) is one of those governed by Addis Ababa city administration health bureau and specializes in maternity services. The hospital was established in 1951E.c. According to HMIS data of 2018/2019 about eight thousand delivery service was given and about two thousand newborns were admitted in NICU. Out of NICU admission about 48% were low birth weight(54).

The study period was from April5-May 15, 2020 G.C

3.2. Study design: the study design was facility based cross sectional study

3.3. Source population: all mothers of preterm and low birth weight neonates admitted to NICU during the study period.

3.4. Study population: all sequentially selected mothers of preterm and low birth weight neonates admitted to NICU during the study period.

3.4.1. Inclusion criteria, all mothers' of preterm (< 34 weeks) and low birth weight infants admitted to NICU during the study period and have difficulty of breastfeeding.

3.4.2. Exclusion criteria, mothers' of preterm infants who are ≥ 34 weeks of gestational age. Mothers whose infant medically kept nil per os (NPO) and whose option is to feed only formula milk.

3.5. Sample size determination

By using single population proportion formula

$\frac{z^2 p(1-p)}{d^2}$ $n_i = \frac{1.96^2 \times 0.5 \times 0.5}{0.05^2}$ $n_i = 384$

z = 1.96, p=50% (0.5), d=5% (0.05)

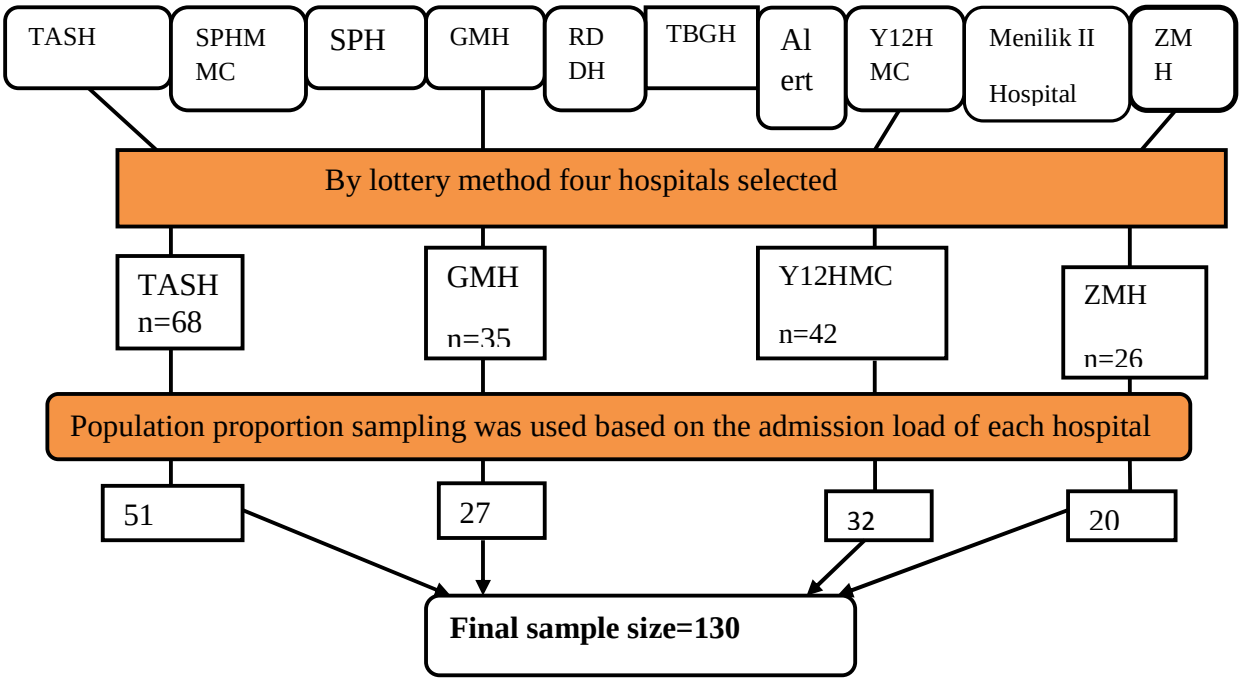
Here the total population is all mothers of preterm and low birth weight infants in each hospital and it is estimated based on average number of preterm and low birth weight infants admitted to the facility. This is counted from admission registration recorded on health management information system (HMIS). Based on this average total population of one month data is calculated from HMIS registration of 2018/2019 of the selected hospitals. According to this data the total population (N) is estimated to 171 in four selected hospitals. Using the correction formula: nf=ni/(1+ni-1)/N, ni=initial sample size, nf =final sample size, N= total population ni = 384, N=171 this is the total number of preterm and low birth weight infants admitted to four study area within one month. Assuming each infant for one respective mother and twins and triplets counted as one. Since there is no data showing number of mothers available in the NICU.

nf =118 and 10% non response rate which is 11.8≈12

So final sample size =130

3.6. Sampling procedure

Among government hospitals who have NICU service in Addis Ababa four hospitals selected by lottery method. The selected hospitals are TASH, GMH, Y12HMC and GMH. Using their admission load of preterm and low birth weight the average of possible one month number of respective mothers estimated. Based on this; number of participants in each hospital allocated by population proportion sampling.



KEYS

TASH=Tikur Anbessa Specialized Hospital

SPHMMC=St Paul's Hospital Millennium Medical College

SPH=St Peter Hospital

GMH= Gandhi Memorial Hospital

RDH= Ras Desta Hospital

TBGH= Tirunesh Beijing General Hospital

Y12HMC= Yekatit 12 Hospital Medical College

ZMH= Zewditu Memorial hospital

Figure 2: Schematic diagram of sampling procedure on breast milk expression practice and factors affecting it among mothers of preterm and low birth weight babies admitted to neonatal intensive care unit of government hospitals in Addis Ababa, Ethiopia, 2020.

3.7. Study variables

3.7.1. Dependent variables

Breast milk expression practice

3.7.2. Independent variables

Socio-cultural factors

- age
- Education
- Family support
- Care Provider support
- Knowledge
- Methods of pumping

Maternal comfort

- Relaxation
- lack of privacy

Neonatal factors

- Health status of the neonate

Psychological factors

- Stress
- Worry of neonatal condition

Maternal factors

- Pregnancy complications

3.8. Operational definitions

Breast milk expression practice: initiation time of milk expression, frequency of milk expression and required milk volume were assessed. In practice of breast milk expression timing of initiation, frequency and volume of milk expressed milk have significant role to maintain lactation.

Required milk volume was amount milk required for the baby over 24 hours calculated based on daily energy requirement or daily fluid requirement**.** It was assessed by asking the mother for fulfilling the requirement during each session of breast expression and cross checked with the record on baby's chart.

Adequate required milk volume: if the mother able express the amount of milk required during each session.

Inadequate required milk volume: if the mother couldn't express the amount of milk required during one or more session.

Early initiation of breast milk expression: if breast expression started within 6 hours of post partum period.

Delayed initiation of breast milk expression: if breast milk expression is started after 6 hours of post partum period. This further classified as initiation within 48 hours and after 48 hours following delivery

Adequate frequency: if frequency of breast expression is 8-12 times every 24hours.

Inadequate frequency: if the frequency breast expression is less than 8 times every 24 hours.

3.9. Data collection instrument and procedure

The questionnaire was developed by principal investigator by reviewing different literatures (39, 45, 48, 50, 51, 53) and it has five sections. These sections are socio-cultural factors, maternal comfort, neonatal factors, psychological factors and maternal factors. Data was collected using Amharic version of well structured questionnaire and patient chart. The questionnaires was developed in English than translated to Amharic, the Amharic version translated to English by language expert to see the consistency and the prepared sets of Amharic version of the questionnaire was pre tested among 10% of sample size in hospital that is not included in the study, in order to maintain clarity of questionnaire and to identify ambiguous item. After pre testing all the ambiguous, misleading and wrongly interpreted questions was omitted and questionnaire was revised in accordance with finding of pretesting. The collected data was reviewed and checked for its completeness before data entry. There was close supervision of the data collectors by the principal investigator.

3.10. Data quality management

To maintain the quality of data two days training was given for data collectors on the objective of the study and ethical issues prior to pre test then additional one day training was given before the actual data collection. The collected data was checked by supervisor and by investigator on daily bases. The collected data was coded, cleared and entered into Epidata version 4.6.0.2 templates developed by the investigator then exported to SPSS version 26 for analysis. Ten percent of the data was double entered and missing values and outliers was checked using SPSS version 26 to check the accuracy of the data.

3.11. Data processing and analysis

The following three aspects of breast milk expression were assessed in this study. These are time of initiation, frequency of expression and volume of expressed milk. In the first objective time of milk expression, frequency and volume of expressed milk was asssed. Initiation time is time at which milk expression started following delivery. It was classified as initiation within two days and after two days following delivery. Frequency is number of milk expression session over 24 hours following delivery. Required milk volume was assessed by report of the mother on fulfillment of the required milk volume durion each session of breast expression and cross checked with the record on the baby's chart. For the second objective Binary logistic regression was done to identify factors affect the outcome variable using crude odds ratio with 95% C.I. Finally all variables with p-value less than 0.05 were entered into multiple logistic regression analyses to control cofounders and to identify factors that significantly affect breast milk expression practice and to determine association between outcome variable.

3.12. Ethical considerations

An ethical clearance was obtained from the research and ethics committee of school of nursing and midwifery, Addis Ababa University (AAU) and official letter was submitted to TASH and Addis Ababa health bureau (AAHB). Ethical clearance was obtained from Addis Ababa public health research and emergency management directorate. After getting permission from each hospital consent was obtained from participants for willingness. The participants' privacy during data collection was maintained by conducting in private place with interviewer of the same sex. They were informed that there is no incentives and harm for their participation in this study. The data obtained from them was kept confidential by not writing participant's name in the questionnaire.

3.13. Dissemination

The finding of the study will be disseminated to public by different methods. Results of the study will be disseminated to Addis Ababa public health research and emergency management directorate. Two hard copies and one soft copy of finding will be submitted to the school. Finally the finding will be published on scientific journal.

CHAPTER 4

RESULTS

4.1. Socio-cultural characteristics of study participants

A total of 124 respondents were enrolled in the study making a response rate of (95.4%). About 76(60.3%) of them were in age group of 18-30 years when the mean age was 29.3 years. Near to 48(40%) and one third of them were para I and para II respectively where para III and para IV make the quarter of the respondents together. Near to half of the respondents' educational level was grade 9-12 while about fourteen percent of them had no formal education. Three fourth of the respondents had got support from their family when expressing milk whereas quarter of them did not. About 96(77%) of respondents had ANC follow up during this pregnancy, among these more than half 54(56.3%) of them had got advice on BF while only 16(16.7%) them had got advice on BME. Almost all of the respondents Knew that human breast milk is important than other milk (formula milk, cow milk) for baby and about two third of the respondents Knew the benefits of colostrum (Table 1).

Near to three fourth 91(73.4%) of the respondents used hand expression method when only 2(1.6%) them used hands on pump method to express milk. Near to 39(32%) respondents had got instruction/support on the method of their choice, of these half of them had got instruction on method of their choice from health care workers whereas only 5(12.8%) them had gott from their family. About 27(22%) of respondents were stay 30 minutes once they start expressing the breast while about two third of them stay less than 30 minutes (Table 1) .

Table 1: Socio-cultural characteristics among mothers of preterm and LBW neonates admitted to NICU of government hospitals in Addis Ababa, Ethiopia, 2020 (n=124).

Variables	Response category	Frequency (%)
Maternal age	18-30 years	76(60.3)
	31-45 years	50(39.7)
Parity	I	48(38.7)
	II	42(33.9)
	III	17(13.7)
	IV	17(13.7)
Educational level	Has no formal education	17(13.7)
	1-8 grade	37(29.8
	9-12 grade	47(37.9)
	Above 12 grade	23(18.6)
Occupation	Merchant	15(12.1)
	House wife	64(51.6)
	Government employer	12(9.7)
	Private sector employer	23(18.5)
	Daily laborer	8(6.5)
	Jobless	2(1.6)
Get support from family when express milk	Yes	94(75.8)
	No	30(24.2)
Have ANC follow up?	Yes	96(77.4)
	No	28(22.6)
Get advice on BF during ANC follow up	Yes	54(56.2)
	No	42(43.8)
Get advice on BME during ANC follow up	Yes	16(16.7)
	No	80(83.3)
Get advice on BME from NICU staff	Yes	9(7.3)
	No	115(92.7)
Know that breast milk important than	Yes	121(97.6)

other milk (formula milk, cow milk) for your baby	No	3(2.4)
Know the benefits of colostrum	Yes	85(68.5)
	No	39(31.5)
Method do you use to express milk	Hand expression	91(73.4)
	Hand expression and manual pump	17(13.7)
	Hands on pump and hand expression	7(5.65)
	Manual pump	7(5.65)
	Hands on pump	2(1.6)
Get instruction/support on the method of their choice	Yes	39(31.7)
	No	84(68.3)
Get instruction on method of their choice from:-	Health care worker	20(51.3)
	Family	5(12.8)
	Mother of other baby	14(35.9)
Time they stay once start expressing?	<30 minutes	82(66.1)
	30 minutes	27(21.8)
	>30 minutes	15(12.1)
Provided guideline/picture/video that shows techniques of breast milk expression by HCW	Yes	3(2.4)
	No	121(97.6)

4.2. Maternal comfort data

Three fourth of the respondents were express milk for their baby at bedside where the baby is admitted, most of the respondents 98(79%) were not comfortable when express milk. Among those who were not comfortable when express milk about 31(32%) were due to physical environment of the NICU. Near to 85(70%) of respondents were not giving KMC for their baby (Table 2).

Table 2: Maternal comfort data among mothers of preterm and LBW neonates admitted to NICU of government hospitals in Addis Ababa, Ethiopia, 2020

Variables	Response category	Frequency (%)
Place where they always express breast?	Bedside	94(75.8)
	Bedroom prepared for mothers	30(24.2)
Comfortable when express breast	Yes	26(21.0)
	No	98(79.0)
What makes them discomfort when express?	Incision pain	17(17.3)
	Worry about health status of the baby	22(22.4)
	Physical environment of NICU	31(31.6)
	Pain at tip of breast	17(17.3)
	Others	11(11.3)
What make them comfortable when express milk	Back massage	2(3.6)
	Apply warm on breast	53(96.4)
Give KMC for your baby	Yes	39(31.5)
	No	85(68.5)
Frequency of KMC	Intermittently	38(97.4)
	Continuously	1(2.6)

4.3. Neonatal factors

The frequency of neonates grouped as very low birth weight and low birth weight based on their birth weight was the same 61(49.2%) with mean of 1455.75 gram. The minimum and maximum birth weight was 800 gram and 2250 gram respectively. Two third of the respondents were give birth by SVD and about 86(70%) of their neonates were in late neonatal period. Nearly half of neonates were in fair condition whereas only 8(6.5%) of them were in critical condition. In addition more than half 68(54.6%) of neonates were able to suck at their mothers breast (Table 3).

Table 3: Neonatal characteristics of preterm and LBW neonates admitted to NICU of government hospitals in Addis Ababa, Ethiopia, 2020 (n=124).

Variables	**Response category**	Frequency (%)
Birth weight	Extremely low birth weight	2(1.6)
	Very low birth weight	61(49.2)
	Low birth weight	61(49.2)
Mode of delivery	SVD	84(67.7)
	C/S	40(32.3)
Postnatal age the neonate	Early neonatal period	38(30.6)
	Late neonatal period	86(69.4)
Health status of the baby	Stable	56(45.2)
	Fair	60(48.4)
	Critical	8(6.4)
Do the baby able to suck?	Yes	68(54.8)
	No	56(45.2)

4.4. Psychological factors

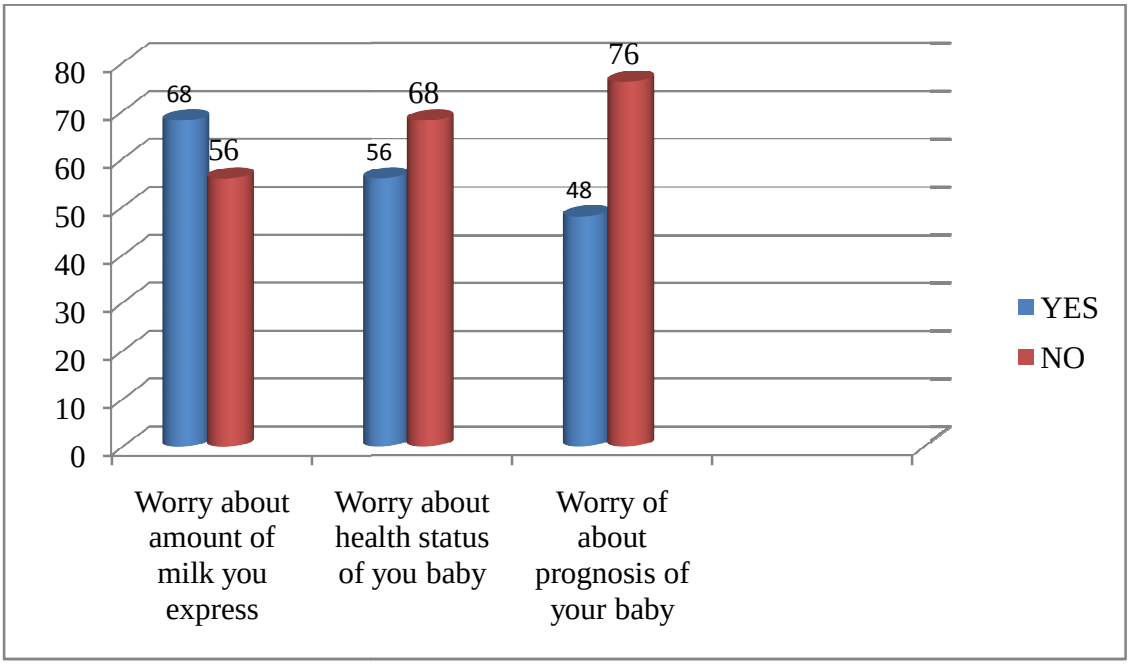


Figure 3: Psychological data among mothers of preterm and LBW neonates admitted to NICU of government hospitals in Addis Ababa, Ethiopia, 2020 (n=124).

More than half 68(54.8%) respondents were worry about amount of milk they express whereas about 68(55%) respondents were not worry about health status of their baby. Nearly sixty percent of respondents were not worry about the prognosis of their baby while about 48(39%) were do (Figure 3).

4.5. Pregnancy related factors

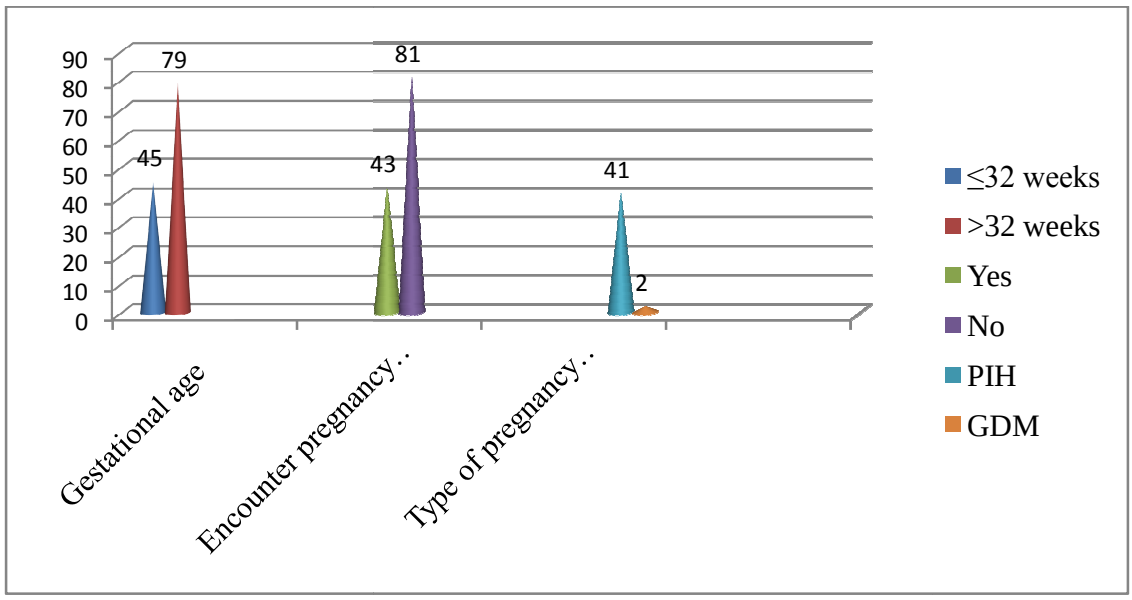


Figure 4: Pregnancy related data among mothers of preterm and LBW neonates admitted to NICU of government hospitals in Addis Ababa, Ethiopia, 2020 (n=124).

Almost all of mothers were give birth at gestational age of 28-34 weeks which can be classified as less or equal to 32 weeks and 32+1 to 34 weeks. About 43(35%) of respondents were encounter pregnancy related complication, whereas the most commonly encountered complication was Pregnancy induced hypertension (PIH) (Figure 4).

4.6. Breast milk expression practice among mothers of preterm and low birth weight neonate admitted to NICU

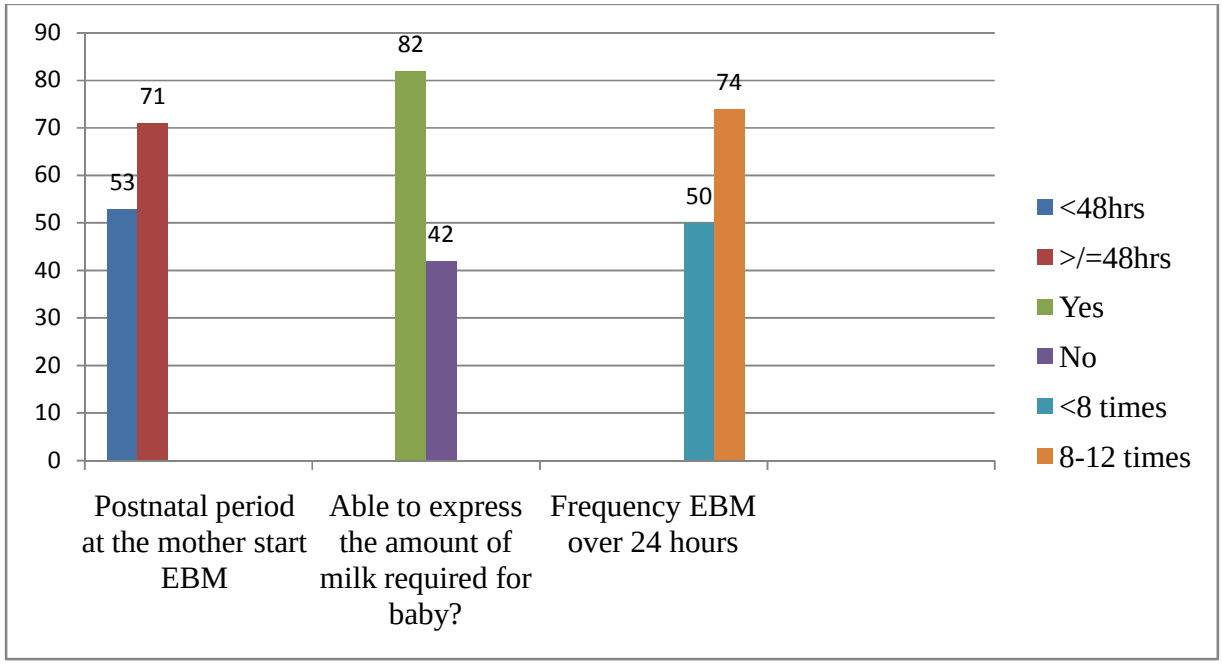


Figure 5: Breast milk expression practice among mothers of preterm and LBW neonates admitted to NICU of government hospitals in Addis Ababa, Ethiopia, 2020 (n=124).

All of the respondents were lately (after 6 hours of postnatal age) initiating breast milk expression, of these more than half 71(57.3%) start milk expression after two days. The maximum time to start breast milk expression was ten days. About 42(34%) respondents were not able to express the amount of milk requested by physician. Forty percent of respondents were express less eight times per 24 hours (Figure 5).

4.7. Factors affecting breast milk expression practice

4.7.1. Factors affecting early initiation of breast expression

None of the respondents were start breast milk expression before 6 hours of postpartum period. All of the respondents were start breast expression after six hours (late initiation of breast expression) of postpartum period. For the sake of analyses late initiation of breast expression grouped as less than 48 hours and two days and above (Table 4).

Getting instruction on method of their choice (COR=0.45; CI=0.21 to 0.98), worry about volume of expressed milk (COR=2.26; CI=1.09 to 4.67) and gestational age ≤32 weeks (COR=2.96; CI=1.34 to 6.57) were significantly affect time to start breast milk expression (initiation of breast milk expression). Mothers who get instruction on method of their choice on milk expression were less likely to start milk expression after two days of postpartum period when compared to those who didn't get instruction. Those mothers who worry about volume of milk were 2.26 times more likely to start milk expression after two days when compared to those who do not worry about volume of milk. Starting breast milk expression after two days of postpartum period was 2.96 times high among mothers who gave birth at ≤32 weeks of GA than those mothers who gave birth at >32 weeks of GA (Table 4).

After controlling confounding factors getting instruction on method of their choice (AOR=0.55; CI=0.31 to 0.96) and gestational age ≤32 weeks (AOR=2.39; CI=1.34 to 4.24) were identified as factors significantly affect the time to start breast milk expression among mothers of preterm and LBW neonates. Mothers who gave birth at GA ≤32 weeks were 2.39 times more likely to start breast milk expression after two days of postpartum period than those who gave birth at > 32 weeks of GA (Table 4).

Table 4: Bivariate and multivariate results of factors associated initiation of breast expression among mothers of preterm and LBW neonates admitted to NICU of government hospitals in Addis Ababa, Ethiopia, 2020 (n=124).

Variables		**Time of Initiation of breast expression following delivery**		**Odds ratio**	
Get instruction on		8-48hrs	>48hrs	COR	AOR
method milk	Yes	22	17	0.45(0.21,0.98)	0.55(0.31,0.96)*
expression the	No	31	53	1	1
choice					
Worry about	Yes	23	45	2.26(1.09,4.67)	1.63(0.95,2.79)
volume of milk	No	30	26	1	1
Gestational age in	≤32	12	33	2.97(1.34,6.57)	2.39(1.34,4.24)**
weeks	>32	41	38	1	

*Statistically significant (p-value < 0.05), **statistically significant (p-value < 0.005)

1= reference category

4.7.2. Factors affecting frequency of breast milk expression

In binary logistic regression analyses frequency of breast milk expression was significantly affected by getting instruction on method of their choice (COR=0.32; CI=0.14 to 0.76), duration of breast expression (expressing for 30 minutes) (COR=0.14; CI=0.04 to 0.58), giving KMC for the baby (COR=0.39; CI=0.17 to 0.90), stable health status of baby (COR=0.12;CI=0.02 to 0.67), baby being able to suck the breast (COR=0.25; CI=0.12 to 0.53), worry about volume of milk (COR=2.50; CI=1.18 to 5.29) and worry about prognosis of baby (COR=2.96; CI=1.40 to 6.28) were significantly affect the frequency of breast milk expression among mothers of preterm and LBW neonates(Table 5).

Mothers of preterm and LBW neonates who get instruction on method of their choice of breast milk expression were less likely to express breast milk less than 8 times per 24 hours including night times when compared to those who do not get instruction. Mothers who give KMC were less likely to express breast milk less than 8 times per day than those who do not give KMC. Those mothers whose babies were stable were less likely to express breast milk less than 8 times than those whose babies were critical. Mothers whose babies able to suck at breast were less likely to express breast milk less than 8 times per 24 hours than those whose babies were not able to suck at breast. Mothers who worry about volume of expressed breast milk were 2.50 times more likely to express breast milk less than 8 times per day when compared to those who do not worry about the volume of expressed milk. In addition mothers who worry about the prognosis of their baby were 2.96 times more likely to express breast milk less than 8 times per 24 hours than those who do not worry about the prognosis of their baby (Table 5).

After controlling for effect of confounder expressing for 30 minutes (AOR=0.11; CI=0.02; 0.71) was facilitator of frequency of breast milk expression. Mothers who were expressing their breast milk for 30 minutes were less likely to express breast milk less than 8 times per 24 hours when compared to those who express for less than 30 minutes (Table 5).

Table 5: Bivariate and multivariate results of factors associated with frequency of milk expression among mothers of preterm and LBW babies admitted to NICU of government hospitals in Addis Ababa, Ethiopia, 2020 (n=124).

Variables		**Frequency EBM over 24 hours**		**Odds ratio**	
		8-12 times	<8 times	COR	AOR
Get instruction on method of their choice	Yes	30	9	0.32(0.14,0.76)	0.59(0.20,1.78)
	No	44	40	1	1
Duration BE	<30 minutes	48	34	0.35(0.11,1.13)	0.28(0.06,1.36)
	30 minutes	21	6	0.14(0.04,0.58)	0.11(0.02,0.71)*
	>30 minutes	5	10	1	1
Give KMC	Yes	29	10	0.39(0.17,0.90)	0.57(0.16,2.00)
	No	45	40	1	1
Health status of the baby	Stable	41	15	0.12(0.02,0.67)	0.45(0.05,4.45)
	Fair	31	29	0.31(0.06,1.67)	0.60(0.08,4.90)
	Critical	2	6	1	1
Do your baby able to suck?	Yes	50	17	0.25(0.12,0.53)	0.44(0.14,1.36)
	No	24	33	1	1
Worry about volume of milk	Yes	34	34	2.50(1.18,5.29)	1.65(0.58,4.70)
	No	40	16	1	1
Worry about prognosis of baby	Yes	21	27	2.96(1.40,6.28)	2.07(0.74,5.74)
	No	53	23	1	1

*Statistically significant (p-value < 0.05)

1= reference category

4.7.3. Factors affecting volume of expressed breast milk

Inadequate milk volume (less than requested by physician) was less likely among mothers of stable (COR=0.05; CI=0.01 to 0.46) and subcritical (fair) (COR=0.07; CI=0.01 to 0.62) babies when compared to mothers of critical babies. Mothers who worry about volume of milk were 7.42 (COR=7.42; CI=2.95 to 18.70) times more likely to be express inadequate volume of expressed milk than those who do not worry about volume of milk expressed. Those mothers who were worry about the health status of their babies were 4.54 times (COR=4.54; CI=2.04 to 10.11) more likely to be express inadequate volume of expressed breast milk (Table 6).

After controlling confounder stable health status of baby (AOR=0.11;CI=0.01 to 0.83), fair (subcritical) health status of baby (AOR=0.07; CI=0.01 to 0.55) , worry about volume milk (AOR=7.50;CI=3.32 to 16.95) and worry about health status of baby (AOR=4.63;CI=2.21 to 9.70) were significantly affect the volume of expressed breast milk. Those mothers whose babies stable were less likely to express inadequate volume milk than those whose babies were in critical condition and mothers whose babies were in subcritical condition were less likely to express inadequate volume of milk when compared to those mothers whose babies were critical. Mothers who worry about volume of milk were 7.50 times more likely to express inadequate volume of milk when compared to those who do not worry about the volume of breast. And mothers who worry about health status of their baby were 4.63 times more likely to express inadequate volume of milk than those who do not worry (Table 6).

Table 6: Bivariate and multivariate results of factors associated with volume of milk among mothers of preterm and LBW neonates admitted to NICU of government hospitals in Addis Ababa, Ethiopia, 2020 (n=124).

Variables		Volume of milk expressed		Odds ratio	
		Adequate	Inadequate	COR	AOR
Health status of the baby	Stable	41	15	0.05(0.01,0.46)	0.11(0.01,0.83)*
	Fair	40	20	0.07(0.01,0.62)	0.07(0.01,0.55)*
	Critical	1	7	1	1
Worry about volume of milk	Yes	33	35	7.42(2.95,18.70)*	7.50(3.32,16.95)**
	No	49	7	1	1
Worry about health status baby	Yes	27	29	4.54(2.04,10.11)*	4.63(2.21,9.70)**
	No	55	13	1	

*Statistically significant (p-value < 0.05)

**statistically significant (p value < 0.0001

1= reference category

CHAPTER 5

DISCUSSION

The overall magnitude of breast milk expression practice; late initiation of BME (after six hours of postnatal period), inadequate frequency (less than 8 times per 24 hours) and inadequate volume of expressed milk (less than requested by physician was 100%, 40.3% and 33.9% respectively. Getting instruction on method of breast milk expression and GA ≤32 weeks were factors significantly affect initiation time of breast milk expression. Staying for 30 minutes when expressing breast was factor significantly affect frequency of breast expression. Stable health status of baby, subcritical (fair) health status of baby, worry about milk volume and worry about health status of baby were factors significantly affect volume of expressed milk. Frequency of breast milk expression (less than 8 times per 24 hours) was dependent variable significantly associated with volume of expressed milk.

The present study revealed that none of the respondents were start milk expression within 6 hours following delivery, all of (100%) the respondents start milk expression after 6 hours. This finding is different from the studies done in Showa university hospital and north India which indicated 17% and 3.3% respondents start milk expression within 6 hours following delivery respectively (38, 41). Again in another study it was identified 36 % of participants start breast expression within 6 hours following delivery (40). This difference might be due to good lactation support during labor and NICU stay.

The present study showed that 40.3% mothers express 8-12 times per 24 hours including night time. This is low when compared to the study done in India that revealed 80% mothers express at least 8 times per day including night time(38). This discrepancy might be due to small sample size.

Two third (66.1%) of the respondents were able to express the amount of milk as per the requirement of baby (as per order of physician). This is higher than the finding of pilot project done in north India (48%)(38). This difference might be due to small sample size.

Getting instruction on method of breast expression they choice was significantly facilitator for starting breast expression within 6-48 hours when compared to those who didn't get instruction.

About two out of five mothers who get instruction were start breast within 6-48 hours This might be due to instruction make easy the difficulty with breast expression.

Expressing breast expression after 48 hours after delivery was 2.39 times more among lower gestational age (≤32 weeks) when compared to those > 32 weeks of GA. This might be due to poor lactation support during ANC follow up and during NICU stay. This is contrary with other study that showed higher gestational age risk factor for late initiation of breast expression (40).

Staying for 30 minutes during each session was significantly facilitator of adequate frequency of breast expression. Nine out of ten mothers who stay for 30 minute during each session were express 8-12 times per 24 hours. There was no factor that significantly risk factor for inadequate frequency of breast expression from socio-cultural characteristics, maternal and neonatal characteristics, maternal psychological characteristics and pregnancy complications.

Stable health status of baby and subcritical (fair) health status of the baby were factors identified as facilitators adequate milk amount as per requirement. About 90% percent of mothers whose babies were in stable and sub-critical condition were express adequate volume of milk. This is similar with the study conducted in Portugal infants well being was facilitators of adequate milk volume (44). Previous studies revealed that early initiation of breast milk expression, use of double pump and proximity to baby were facilitators adequate milk volume (14, 43, 45).

Previous studies showed that worries related to inadequate milk supply, difficulty with expressing breast, physical separation, cesarean section delivery and pregnancy induced hypertension were associated with low volume expressed breast milk(41, 44). In present study worry about amount milk was 7.5 times more likely affect milk volume than those who do not worry. This similar with study done in Portugal (44). In addition, this present study showed that worry about health status of the baby was significantly affect milk volume. Mothers who worry about the health status of baby were 4.63 times more likely to express inadequate amount of milk as per requirement by physician.

Strength and Limitation of the study

There are some strengths of present study. This is the first study to assess the practice of breast milk expression among mothers of preterm and low birth weight neonates admitted to NICU in Addis Ababa, Ethiopia. From all government hospitals that have neonatal intensive care in Addis Ababa four hospitals selected randomly to increase representativeness of the finding.

Due to the cross-sectional nature of the study it is difficult to establish causal relationship. The practice breast milk expression was not observed while they express and didn't follow for frequency of expression. It was assessed based on report mothers give. So, further study should be carried out to explore detailed practice of breast expression by observing initiation and frequency of milk expression. Limitation of the study was milk volume was assessed based on amount of milk required by baby that was ordered by physician based on daily enery/fluid requirement of the baby. The daily requirement of milk is calculated by considering the health status of the baby and only trophic feeding is ordered until full feeding is started. So present study has limitation to assess the exact volume of milk the mother can express per day. Further study should be conducted to determine the volume of milk the mothers can express per day.

CHAPTER 6

Conclusion and recommendation

6.1. Conclusion

The magnitude of late initiation of breast expression, inadequate frequency and inadequate volume were 100%, 40.3% and 33.9% respectively. Getting instruction on method of their choice and lower gestational age (≤32 weeks) were factors associated with late initiation of breast expression. Expression of breast for 30 minutes was facilitator factor for adequate frequency breast expression within 24 hours. Worry about amount of milk, worry about health status of the baby and inadequate frequency (<8 times per 24 hours) were factors significantly affect volume of expressed milk.

In order to promote good practice breast milk expression among mothers of preterm and low birth weight inter-departmental collaboration is required. Education on importance breast milk and breast milk expression should be started during ANC follow up.

6.2. Recommendation

ANC Providers should give health education on importance breast milk expression and time of intiation for those mothers who are at risk to have preterm and low birth weight baby. This should have to continue at labor and delivery ward by encouraging early initiation of breast expression.

Mothers should be supported by NICU staff during breast milk expression on method of breast milk expression they prefer to use. Specially those give birth at less or equal to 32 weeks of GA because they are more likely to start breast expression after 48 hours following delivery. If possible availing lactation specialist might be advantageous to solve the problem of early initiation of breast expression and to ensure adequate milk supply among mothers of preterm infants.

For researchers: Quality improvement project should be conducted by health professions working in NICU on practice breast milk expression among mothers of preterm and low birth weight neonates. Further study should be carried out to explore detailed practice of breast expression by observing during expression and measuring exact volume.

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APPENDIX

ANNEX A: ENGLISH VERSION OF QUESTIONNAIRE

Information sheet

My name is Misgana Hirpha I am MSc student at Addis Ababa University College of Health Sciences School of Nursing & Midwifery track of neonatal nursing. I am conducting study on title breast milk expression practice and factors affecting it among mothers of preterm and low birth weight neonates admitted to NICUs of government hospital, Addis Ababa Ethiopia. The study submitted to the University for Partial Fulfillment of the requirements of master's degree in neonatal nursing.

The purpose of this is to assess breast milk expression practice and to identify factors affecting it among mothers of preterm and low birth weight neonates admitted to NICUs of government hospitals. The finding from this study will be used to design and implement strategies, to develop guidelines and protocols. In addition it can be used by policy makers and researchers.

The study has no risk on participants; the data is collected by interviewer administered questionnaire. There is no sample that is collected from the participant. By participating in this study there is no negative consequence on you.

Consent form

Addis Ababa University College of Health Sciences School of Nursing & Midwifery questionnaire to assess breast milk expression practice and factors affecting it among mothers of preterm and low birth weight babies admitted to neonatal intensive care units of government hospitals in Addis Ababa, Ethiopia, 2020.

Hello! My name is _____I am going to ask you questions about breast milk expression and how you are feeding your baby in NICU. The finding from this study will be used to design and implement strategies, to develop guidelines and protocols. In addition it can be used by policy makers and researchers. You are selected to participate in this study by chance. Here is some general information about the study.

Title of the study: Breast milk expression practice and factors affecting it among mothers of preterm and low birth weight neonates admitted to NICUs of government hospital, Addis Ababa Ethiopia.

Background of the study: The practice of breast milk expression is a method used to establish and to maintain lactation when there is difficulty of breast feeding like preterm and low birth weight infants. The time to start expressing, frequency of expression and volume of expressed milk are important aspects to establish and maintain lactation. In NICU mothers of preterm and low birth weight infants complain inadequate volume of expressed milk and there is also a consideration of formula milk to fulfill the requirement volume of milk. To assess the practice and factors affecting breast milk expression in neonatal intensive care unit (NICU) this study will be conducted in Addis Ababa government hospitals.

Objective of the study: To assess Breast milk expression practice and factors affecting it among mothers of preterm and low birth weight neonates admitted to NICUs of government hospital, Addis Ababa Ethiopia.

Risk of the study: This study has no risk for the participants.

Right of participants: your participation voluntarily and you are not obligated to answer any question you do not want to answer. This will take about 20 minutes, if you feel discomfort with the interview you can withdraw any time you want.

Confidentiality: your name will be not written in this form and will never be used in connection any information you tell us. The information given by you will be used only for this study and kept confidential.**Name of PI**:Misgana Hirpha; Address: 0929046205/0924029613**Email**: galataa2014@gmail.co

Date of data collection ___/___/___ (dd/mm/yy)

Part I: socio-cultural characteristics

S. No	Variables	Alternative choices	Code	Skip to
101.	Maternal age	--------		
102	Parity	_____		
103	Educational level	1. Has no formal education 2. 1-8 grade 3. 9-12 grade 4. Above 12 grade		
104	Occupation	1. Merchant 2. Government employer 3. Private 4. Daily laborer 5. Jobless 6. Other(specify) ----------		
105	Do you get support from your family when you express milk for your baby?	1. Yes 2. No		
106	Did you have ANC follow up?	1. Yes 2. No		
107	Did you get advice on BF during ANC follow up?	1. Yes 2. No		
108	Did you get advice on breast milk expression during ANC follow up?	1. Yes 2. No		
109	Did you get advice on breast milk expression from NICU staff?	1. Yes 2. No		
110	Do you now that breast milk important than other milk (formula milk, cow milk) for your baby?	1. Yes 2. No		
111	If yes to above question where do you get the information?	1. Media 2. health care workers 3. community		
112	Do you know the benefits of colostrum?	1. Yes 2. No		

113	Do you express your breast milk?	1. Yes 2. No		
114	Which method do you use to express milk?	1. Hand expression 2. Manual breast pump 3. Electric pump 4. Hands on pump		
115	Did you get any instruction/support on the method of your choice?	1. Yes 2. No		
116	If yes to the above question,who gives you instruction?	1. Health care workers 2. Family 3. From other mothers 4. Other specify_____		
117	For how long you express once you start expressing?	_____(in minute)		
118	Do health care workers give you any guideline/picture/video that shows techniques of breast milk expression?	1. Yes 2. No		
Part II. Maternal comfort				
201	Where do you always express your breast?	1. Bedside 2. Waiting room prepared for mothers		
202	Are you comfortable when you express your breast?	1. Yes 2. No		
203	What makes you discomfort when you express?	1. Incision pain 2. Worry about health status of the baby 3. Poor prognosis of the baby 4. Physical environment of NICU		
204	Which one the following makes you comfortable when you express milk for your baby?	1. Massage 2. Music 3. Warmth shield 4. Other ----------		
205	Do you give KMC for your baby?	1. Yes 2. No		
206		1. Intermittently 2. Continuously		
Part III. Neonatal factors				
301	Birth weight	_____(in gram)		

302	Mode of delivery	1. SVD 2. C/S 3. Forceps delivery 4. Vacuum		
303	Post natal age of the infant	_____(in hour if ≤ 3days, in day if > 3 days)		
304	What is health status of your baby?	1. Stable 2. Fair 3. Critical		
305	Do your baby able to suck?	1. Yes 2. No		
Part IV. Maternal Psychological factors				
401	Do you worry about amount of milk you express?	1. Yes 2. No		
402	Do you worry about health status of you baby?	1. yes 2. no		
403	Do you think of about prognosis of your baby?	1. Yes 2. No		
Part V. Pregnancy related factors				
501	Gestational age	_____(in weeks)		
502	Did you encounter any pregnancy related complication?	1. Yes 2. No		
503	If yes to the above which one of pregnancy related complications did you encounter?	1. Pregnancy induced hypertension (PIH) 2. Eclampsia 3. Gestational diabetic mellitus(GDM) 4. Other specify _____		
Part VI. Breast milk expression practice				
601	At what postnatal period you start expressing your breast?	_____		
602	How many times you express your breast per day or over (24hours) including night time?	_____(in number)		
603	Do you able to express the amount of milk requested by physician?	1. Yes 2. No		

ANNEX B. AMHARIC VERSION OF QUESTIONNAIRE

የመረጃ ቅፅ

ጤና ይስጥልኝ፤ ስሜ ----------

ዘሬ እዝህ የተገኘሁት በዝህ በጨቅላ ህፃናት ክፍል ስለ ጡት ማለብ እና የታለበ የጡት ወተት ለህፃን መማገብ ጋር የተያየዙ ጥያቄችን ልጠይቅሽ ነዉ።።

የዚህ ጥናት ግኝት ስትራቴጂዎችን ለመንደፍ እና ለመተግበር ፣ መመሪያዎችን እና ፕሮቶኮሎችን ለማዘጋጀት ይጠቅማል ።። በተጨማሪም ፖሊሲ አውጪዎች እና ተመራማሪዎች ሊጠቀሙበት ይችላሉ ።። አንቺ የተመረጥሽዉ በዕጣ ስሆን ጥያቄዎቹ እንደሚከተለዉ ቀርቦኃል።።

የጥናቱ ርዕስ፤ ያለግዜያቸዉ የተወለዱ ልጆቻቸን በጨቅላ ህፃናት ክፍል ዉስጥ እየስተመሙ ያሉ እናቶች ስለ ጡት ማለብ አተግባበር እና አተግባበሩን ልጎዱ የሚችሉ ምክንያቶች የሚል ነዉ።።

የጥናቱ ማነሻ ነጥቦች፤ የጡት ማለብ አተግባበር ማለት አንድ እናት ልጆ ጡት መጥባት የማይችልበት ደረጃ ለይ ስሆን ለልጆ የጡት ወተት ለመስጠት እና የጡት ቀጣይነት ባለዉ መልኩ እንዲያመነጭ የሚደረግ ዘዴ ነዉ።። ይንን ለመዳሰስ ሦስት ሁኔታዎች ይዳሰሳሉ፤ እነዝህም፡- ጡት ማለብ የሚጀመርበት ግዜ፤ በየስንት ሰዓት እንደሚታለብ እና የታለበ የወተት መጠን ነቸዉ።። በጨውላ ህፃናት ክፍል ዉስጥ ያለግዜያቸዉ የተወለዱ እና ክብደታቸዉ አነስተኛ ሆኖ የተወለዱ ህፃናት ፀጡት ይዞ መጥባት ስለማይችሉ አናቶች በቂ ወተት ማለብ ስለማይችሉ ፎርሙላ ወተት ስያስጀሚሩ ይስተዋላል።። ስለሆነም ይህንን እና መሰል ጉዳዎችን ለመዳሰስ ይህ ጥናት በአዲስ አበባ ከተማ በመንግስት ሆስፕታሎች በጨቅላ ህፃናት ክፍል ዉስጥ የሚሠራ ይሆናል።።

የጥናቱ ዋና ዓላማ፤ያለግዜያቸዉ የተወለዱ ልጆቻቸን በጨቅላ ህፃናት ክፍል ዉስጥ እየስተመሙ ያሉ እናቶች ስለ ጡት ማለብ አተግባበር እና አተግባበሩን ልጎዱ የሚችሉ ምክንያቶችን መዳሰስ።።

ጥናቱ ልያስከትል የሚችለዉ ጉዳት፤ ምንም ዓይነት ጉዳት የለዉም።።

የተሳታፊዎች መብት፤ ማንኛዉም እዝህ ጥናት ለይ የሚሳተፈዉ ሰዉ በፍቃድ ለይ የተመሠረተ ስሆን መመለስ ያልፈለገዉን ጥያቄ በግድ ለመመለስ አይገደድም።። ስም እዚህ መጠየቅ ላይ መግለፅ አያስፈልግም እንዲሁም የሚትሰጭን መረጃ ለዚህ ጥናት ብቻ እንጂ ለሌላ ጉዳይ እንዲውል አይደረግም።።

ለማንኛውም ጥያቄ የጥናቱን ዋና ተመራማሪ ለማግኘት፤ ስልክ ቁጥር 0929046205/0924029613 ፣ ኢሜል፤ galataa2014@gmail.com

የስምምነት ቅፅ

በአዲስ አበባ ዩኒቨርሲቲ ጤና ሳይንስ ኮሌጅ፣ የነርሲንግ እና ሚድዋይፋሪ ትምህርት ቤት የመወለድ ጊዜያቸውን ሳይደርስ እና ክብደታቸው ከሚፈለገው ቤታች ሆኖ የተወለዱ ህፃናት፡ እናቶች የሚያደርጉት የጡት ማለብ አተገባበር እና ሚኪንያቶችን ለመዳሰስ የተዘጋጀ መጠየቅ፡፡

ጤና ይስጥልን ፣ እኔ ---------- ኢዚ የተገኘው በአቶ ምስጋና ሂርጳ የአዲስ አበባ ዩኒቨርሲቲ ጤና ሳይንስ ኮሌጅ የሁሌተኛ ዲግሪ ተማሪ ወኪዬ ነው፡፡ በመቀጠልም ባሁኑ ሰዓት ያንቺን ጡት የማለብ አተገባበር ላይ መረጃ ለመሰብሰብ ሲሆን ካንቺ የሚፈለገው እኔ በዚህ ዙሪያ የሚጠይቅሽን ጥያቄ በመመለስ ጥናቱ ላይ እንዲትሳተፊ ነው፡፡ የጥናቱ ውጤት ጥናቱ የሚደረግቤት ስፍራ ላይ እስትራቴጀችን ለመቅረፅ እና ለማከናወን ይውላል፡፡ ስምሽን እዚህ መጠየቅ ላይ መግለፅ አያስፈልግም እንዲሁም የሚትሰጭን መረጃ ለዚህ ጥናት ብቻ እንጂ ለሌላ ጉዳይ እንዲውል አይደረግም፡፡ እዚህ ጥናት ላይ የሚትሳተፊ በፈቃድሽ እንጂ በጊዴታ አይደሌም ስለዚህ ማንኛውም መመለስ ያልፈለግሽውን ጥያቄ በግድ እንዲትመለሺ አትገደጅም እንዲሁም መጠይቁን ጀምረሽ ያልተመቸሽ ሁኔታ ካሌ በማንኛውም ሰዓት መቋረጥ ትችያለሽ፡፡ ይህ መጠየቅ 20 ደቂቃ አከባቢ የሚገመት ጊዜ ልወስድብሽ ይችላል፡፡

1. ለመቀጠል ፈቃደኛ ነሽ? 1. አዎ 2. አይገለም
2. አይደለም ካለች ወደ ለላ ተሳታፊ ይለፉ

ለማንኛውም ጥያቄ የጥናቱን ዋና ተመራማሪ ለማግኘት

ስልክ ቁጥር 0929046205/0924029613

የጠያቂው ኮድ ---------- ስም ---------- ፊርማ----------

መጠይቁ የተደረገበት ቀን ----------የተጀመረበት ሰዓት -------- የተጠናቀቀበት ሰዓት --------

የመጤይቁ ውጤት 1. ተጠናቋል 2. ተሳታፊው አልተገኘም 3. ተሳታፊው ፈቃደኛ አይደለም4.በከፊል ተሞልቷል ::

ያረጋገጠው ሱፐርቫዘር ስም---------- ፊርማ ----------

መረጃ የተሰበሰበት ቀን----------/----------/----------

ክፍል ፩. ሶሾ ካልቸራል መረጃ

ተ.ቁ	ጥያቄ	አማራጭ	ኮድ	ወደ
101.	የእናት እድሜ	____በዓመት		
102	ስንት ጊዜ አርጊዘሻል?	_____		
103	የትምህርት ደረጃ	1. ያልተማረች 2. ከ 1-8 ክፍል 3. ከ9-12 ክፍል 4. ከ12ኛ ክፍል በላይ		
104	የሥራ ዓይነት	1. ነጋዴ 2. የመንግሥት ሠራተኛ 3. የግል 4. የቀን ሠራተኛ 5. የቤት እመቤት 6. ሌላ ----------		
105	ጡት ስታልቢ ከቤተሰብ የሚረዳሽ ሰው አለ?	1. አዎ 2. አይበለም		
106	ባሁኑ እርግዝና ወቅት የቅድመወሊድ ክትትል አድርገሽ ነበረ?	1. አዎ 2. አይደለም		
106	ስለ ጡት ማጥባት ምክር/ትምህርት ተሰቶሽ ነበረ?	1. አዎ 2. አይደለም		
107	ስለ ጡት ማለብ ምክር/ትምህርት ተሰቶሽ ነበረ?	1. አዎ 2. አይደለም		
108	የጤና ባሙያዎች ስለ ጡት ማለብ የሚሳይ መመሪያ/ስኢል/ቪዲዮ ሰቶሻል?	1. አዎ 2. አይደለም		
109	የእናት ጡት ቀተት ከሌሎች ወተት (ከጣሳ ወተት፤ ከላም ወተት) በተሻለ መልኩ አስፈላጊ ይመስልሻል?	1. አዎ 2. አይደለም	2	111
110	አዎ ከሆነ መረጃዉን ከየት ሰመሽ?	1. ከሚድያ (ከቲቪ፣ ከራድዮ) 2. ከጤና ባለሙያዎች 3. ከአከባቢዬ ማህበረሰብ 4. ሌላ----------		
111	ስለ እንገር (መጀመሪያ ግዜ የሚወጣ ጡት ወተት ጥቅም ታዉቃለሽ?	1. አዎ 2. አይደለም		
112	ጡትሽን ታልባለሽ?	1. አዎ 2. አይደለም		
113	ጡትሽን በማለብ ከነዚህ የትኛውን ዘዴ ነው የሚትጠቀሚ ?	1. በእጅ በማለብ 2. በማኑዋል ፓምፕ 3. በኤለክትርክ ፓምፕ 4. በእጅ እና በፓምፕ		ከ ፣ በላይ መምረጥ ይቻላል
114	አንቺ እየተጠቀምሽ ያለው የጡት ማለብ ዘዴ ላይ ትምህርት/እገዛ አግንተሽል?	1. አዎ 2. አይደለም	2	116
115	መልስሽ አዎ ከሆኔ ከማነው ያገኘሽው?	1. ከጤና ባለሙያዎች 2. ከቤተሰብ 3. ከለላ ልጅ እናት 4. ከለላ----------		
116	አንድ ጊዜ ማለብ ከጀመርሽ ምንኃል ጊዜ ትቆያሽ	----------በደቂቃ		
117	የጤና ባሙያዎች አንቺ እየተጠቀምሽ ያለው	a. አዎ		

	የጡት ማለብ ዘዴን የሚሳይ መመሪያ/ስኢል/ቪዲዮ ተሰቶሻል?	b. አይደለም		
ክፍል 2፡ ጡት ማለብ እና የእናት ምቾት መረጃ				
201	ብዙ ግዜ የትነው ጡትሽን የሚታለቢው	1. ልጁ ያለበት አከባቢ ቁጭ ብዬ 2. ለማረፊያ የተሰጠኝን አልጋ ላይ		
202	ጡትሽን ስታልቢ ምቾት ይሰማሻል?	1. አዎ 2. አይደለም	1	204
203	መልስሽ አይደለም ከሆኔ ምቾት የሚነሱሽ ነገሮች ምንድናቸው?	1. የኦፐሬሽን ቁስል 2. ስለ ልጇ ጤንነት ሁኔታ 3. ልጇ ብዙህ ሌውጥ እያሳዬ ስለ አይደለ 4. የጨቅላ ህፃናት ፅኑ ክብካቤ ክፍሉ አመቺ ስለ አል ሆኔ 5. ሌላ----------		ከ 1 መልስ በላይ መምረጥ ይቻላል
204	ጡት ስታልቢ ምቾት እንድሰማሽ ከነዝህ የትኞቹን ትጠቀማለሽ?	1. ጀርባ በመታሸት 2. ሙዚቃ በመስማት 3. ሞቅ ያለ የማለባ ጫፍ በመጠቀም 4. ሌላ ----------		
205	ልጂሽን ቆዳ ለቆዳ በማገናኘት ሆድሽ ለይ ትይዛለሽ?	1. አዎ 2. አይደለም		
206	አዎ ከልሽ በቀን ስንት ግዜ ትይዛለሽ?	1. ሳላቹርጥ 2. የተወሰነ ሰዓት	2	301
ክፍል 3፡ስለ ጨቅላ ህፃኑ የሚያመላክቱ መራጃዎች				
301	ስወለድ ህፃኑ ክብደት	___(በግራም)		
302	በየትኛዉ ስልት ነበረ የወለድሽዉ?	1. በማማጥ 2. በቀዶጥገና 3. በመሳሪያ በመታገዝ(ፎርሴፕስ) 4. በመሳሪያ በመታገዝ(ቫክይዉም)		
303	ከተወለደ/ች የልጂሽ እድሜ ስንት ነዉ?	------ከ 3 ቀን በታች ከሆነ በሰዓት ከ 3 ቀን በላይ ከሆነ በቀን ይፃፉ		
304	የልጂሽ ጤንነት ሁኔታ ምን ደራጃ ለይ ነዉ ያለዉ?	1. ጥሩ 2. ምንም ኣይልም 3. በጣም የታመመ		
305	ልጂሽ ጡት መጥባት ይችላል?	1. አዎ 2. አይደለም		
	ክፍል 4፡ስለ እናት ሥነ-ልቦናዊ ሁኔታ የሚያመለክቱ መራጃዎች			
401	ስለምታልብዉ የወተት መጠን ያሳስብሻል/ያሰጋሻል?	1. አዎ 2. አይደለም		
402	የልጂሽ ጤንነት ሁኔታ ያሳስብሻል/ ያሰጋሻል?	1. አዎ 2. አይደለም		
403	ስለልጂሽ የህክምና ዉጤት በመገመት/ በመተንበይ ታስባለሽ?	1. አዎ 2. አይደለም		
ክፍል 5፡ ከእርግዝና ጋር የተያየዙ የእናት ጤንነት ሁኔታን የሚያመለክቱ መራጃዎች				
501	ልጁ ስወለድ/ስትወለድ የእርግዝናሽ እድሜ ስንት ነበረ?	---------- በሳምንት		
502	ባሁኑ እርግዝና ወቅት ከእርግዝና ጋር ተያዥነት ያለው ችግር/ህመም ኣጋጥሞሽ ነበረሰ?	1. አዎ 2. አይደለም	2	601
503	አዎ ከሆነ ከነዚህ የትኛው ነው ያጋጠመሽ	1. በእርግዝና ምክንያት የሚመጣ		

		የድም ግፊት መጨመር 2. እክላምሺያ (Eclampsia) 3. በእርግዝና ወቅት የሚመጣ የሱካር በሽታ 4. ሌላ----------		
ክፍል 6፡ሥለ ጡት ማለብ አተገባበር መራጃ				
601	ከወሊድ ቦኃላ ምንያይል ጊዜ ውስጥ ነው ጡትሽን ማለብ የጀመርሽው?	----------		
602	በቀን ማለትም በ24 ሰዓት ውስጥ ስንት ጊዜ ጡትሽን ታልባለሽ?	---------- በቁጥር		
603	ጡትሽን ስታልቢ ሀኪሙ ለልጂሽ ያስፈልጋል/ያዘዘለትን ያይል መጠን ማለብ ትችላለሽ?	1. አዎ 2. አይደለም		